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CAUSE-DELETED LIFE TABLES
FOR CANADA (1921 to 1981):
An Approach Towards Analysing
Epidemiologic Transition

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ABSTRACT

A series of cause-deleted life tables for every decade from 1921 to 1981 has been developed for Canada for males and females. A quantitative assessment of the epidemiologic shifts in mortality over the past six decades has been attempted through the parameters of the life tables and indices such as Entropy. A method to test the consistency of the derived cause-deleted life tables is presented. The importance of such tables, in the analysis and projection of mortality and the examination of health-resource priorities, is stressed.

Key Words: Cause-deleted tables, Epidemiologic transition, Demographic change

ABSTRACT

CAUSE-DELETED LIFE TABLES FOR CANADA, (1921 TO 1981):

AN APPROACH TOWARDS ANALYSING EPIDEMIOLOGIC TRANSITION

Introduction

Concurrent with the decline in mortality in the developed countries of the world, such as Canada, there have been significant shifts in the cause and age pattern of mortality during the past several decades. These shifts have been more or less universal and have resulted in transferring the mortality burden from the younger ages to the older ages. The pattern of epidemiologic shift has been essentially from the predominance of infectious and parasitic diseases and diseases of the infancy in early decades, to degenerative diseases of the older ages in more recent ones. This transition has resulted, among other things, in the increased life expectancy at birth, childhood and young adult ages.

A cause-deleted life table with respect to a specific cause is constructed on the assumption that the mortality attributed to that cause does not operate. In other words, the deaths due to that cause are deleted in deriving the age-sex specific death rates which provide the building blocks to the life table construction. One of the key limitations underlying the derivation of these tables is the assumption that each cause acts independently of the other; and the interaction effects are thereby left out of consideration in the construction of these tables. This assumption of independence of the causes that operate is made, as in other studies of cause-deleted tables (e.g. Preston, Keyfitz and Schoen(9)), with the complete understanding that reality is in variance with this assumption.

Besides, the study makes no attempt to determine the impact of 'spillover' of mortality into other causes once a particular cause is deleted. The data for determining quantitatively the 'spillover effects' of a selected deletion are to our knowledge not yet available in Canada; however, attempts will be made in follow-up studies to estimate the impact of these effects.

Objectives of this Study

One of the main objectives of this study was to develop time-series cause-deleted life tables for Canada for every decade since 1921. In addition and perhaps more importantly, an effort was made to assess quantitatively the epidemiologic shifts in terms of the parameters of the life tables such as life expectancy, increase in survivors to older ages and to examine the analytical potential of indices such as entropy.

This study is one of a series of studies pertaining to **Canadian mortality** that has been undertaken during the last couple of years. Some of the others are:

1) Longevity and Historical Life Tables, 1921 to 1981 (published)

2) Rectangularization of the Survival Curve and Entropy (published)

3) Epidemiologic Transition in the context of Demographic Change (presented at the Learned Society meeting, 1987)

4) Cause Deleted Life Tables, 1921 to 1981 (current work)

5) Projected Quinquennial Life Tables, 1851 to 2051 (work in progess)

Methodology of Construction

The methodology employed for constructing the cause-deleted tables from 1961 onwards was the one enumerated in the book *Applied Mathematical Demography* by Keyfitz.(2)

The method assumes the availability of conventional period life tables for the corresponding years. For this purpose, we have employed the abridged life table series available in the publication *Longevity and Historical Life Tables, Canada and Provinces (1921-1981)* by Nagnur.(4) The procedure for deriving the basic survivor column of the cause-deleted life tables may be summarized as follows:

Let:

l_x = The number of survivors to exact age x in an ordinary life table (having no cause deleted)

l_x^{-i} = The number of survivors to exact age x in the life table with mortality due to cause 'i' deleted.

M_x = Observed age-group central death rate for ordinary life table (having no cause deleted)

M_x^{-i} = Observed age-group death rate for cause-deleted life table having mortality due to cause 'i' deleted. If:

$$R_x^{-i} = \frac{M_x^{-i}}{M_x}$$

(Which is equivalent to the proportion of total deaths for those due to cause 'i' deleted.)

...(1)

then, the survivors to exact age (x + n) of the *i th* cause-deleted life table is given by the recurrence relationship

$$l_{x+n}^{-i} = \left(\frac{l_{x+n}}{l_x}\right)^{R_x^{-i}} \cdot l_x^{-i}$$

... (2)

The radix of the cause-deleted life table, l_0^{-i}, is assumed to be = 100,000 for all i's. (The above relationship can also be expressed as

$$q_x^{-i} = 1 - (1-q_x)^{R_x^{-i}}$$

Where q_x represents the probability of dying in the age interval from the conventional life table.)

Now, with the availability of the observed central death rates (M_x s and M_x^{-i} s) and the corresponding values from the survivors column of ordinary life table (l_x s), the survivor column of the cause-deleted life table (l_x^{-i} s) could be readily derived (for all i's).

Utilizing the interdependent relationships among the various columns of the life tables - $_nq_x$, $_np_x$, $_nL_x$, T_x and e_x^0 , all elements of the tables are easily derived.

In the present context, the cause-deleted tables were derived separately for **males** and **females.**

Cause of Death Categories Selected

The cause-deleted tables for Canada prior to 1960 were developed and various elements related to these were included in the publication *Causes of Death, Life Tables for National Populations* by Preston, Keyfitz and Schoen.(9) The cause of death categories considered in these tables numbered 12 for women and 11 for men, including a catch-all residual category.

In this report, the set of tables, including reconstructed as well as newly constructed tables, detailing all the columns of the table structure, could be grouped into two parts:

(a) for each decade, from 1921 to 1951, the cause-deleted tables were constructed using corresponding survivor columns (l_x^{-i} s), given in the publication(9) mentioned above;

(b) for each decade beginning with 1961, covering the period of 7th, 8th and 9th revision of the International Classification of Diseases (ICD), the tables have been constructed using the basic data available from the Canadian Vital Statistics and Census sources.

For this set of tables, the same cause of death categories as before have been considered with suitable adjustments so that ICD codes conform to the later revisions. This aspect should facilitate the temporal comparisons of the effects of deleting a specific cause category over the entire period of the last six decades.

In addition, it ensures that we have an uninterrupted series of identical cause-deleted life tables for Canada from 1921 to 1981, at ten year intervals. This will help among other things to gauge and quantitatively assess the epidemiologic shifts that have taken place concurrent with the demographic change to low mortality levels in recent years.

The following is a list of cause categories that was employed with respect to life tables for females; as was mentioned earlier, we adhered to the same list of cause categories, as had been employed in the publication cited above(9).

Cause of Death Categories:

0) No Cause Deleted

1) Respiratory Tuberculosis

2) Other Infectious and Parasitic Diseases

3) Malignant and Benign Neoplasms

4) Cardiovascular Disease

5) Influenza, Pneumonia, Bronchitis

6) Diarrhea, Gastritis, Enteritis

7) Certain Degenerative Diseases

8) Complications of Pregnancy

9) Diseases of Infancy

10) Motor Vehicle Accidents

11) Other Accidents and Violence (These exclude Motor Vehicle Accidents)

12) All Other and Unknown Causes

With respect to life tables for males, the same list of cause categories was employed with the obvious deletion of the cause related to "complications of pregnancy." Hence, there were 12 cause categories for females and 11 for males.

The following is a brief explanation, in relation to the *9th revision of ICD,* of the above cause of death categories. In some instances, the entire chapter of ICD constitutes a category but in others they refer to either specific diseases within a chapter or as a group of diseases from several chapters. For example, the first category refers to only respiratory tuberculosis while the 2nd category consists of the rest of the causes in Chapter I - Infectious and Parasitic Diseases. The 3rd category consists of all of the Chapter II which refers to Neoplasms. The next category that is titled "Cardiovascular Diseases" refers to all causes of the "Circulatory System" contained in Chapter VII. The category of "Certain Degenerative Diseases" includes diabetes from Chapter III, ulcers, chronic liver disease and cirrhosis from Chapter IX and nephritis and nephrosis from Chapter X. The rest of the categories are self-explanatory.

The mortality data in the Canadian Vital Statistics are classified on the basis of various "underlying causes." Though picking an "underlying cause" , when multiple causes could contribute to the final outcome, may lend itself to the possibility of misclassification and miscoding, it is considered in this study that it is not significant enough to affect either the results or the comparisons emanating from the cause-deleted life tables. Hence, no adjustment was made to the official data on age-sex-cause specific mortality.

Composition of Cause-of-Death Categories Employed under the Various Revisions
of the International Classification of Causes of Death

Cause of Death Categories	ICD codes 4th Revision	ICD codes 5th Revision	ICD codes 6th and 7th Revision	ICDA codes 8th Revision	ICD codes 9th Revision
Respiratory Tuberculois	23	13	001-008,	010-012	010-012
Other Infectious and Parasitic Diseases	1-10,12-22, 24-44,80,83, 96,177	1-12,14-32, 34-43,44a,c,d 177	010-138	000-008, 013-136	001-009, 013-139
Malignant and Benign Neoplasms	45-55,72, 139a	44b,45-57,74	140-239	140-239	140-239
Cardiovascular Diseases	56,82,90-95, 97-103	58,83,90-103	330-334, 400-468	390-458	390-459
Influenza, Pneumonia, Bronchitis	11,106-109	33,106-109	480-502	470-491	480-491
Diarrhea, Gastritis, Enteritis	119,120	119,120	543,571,572	009,535,	535,555-558,
Certain Degenerative Diseases	59,117,124, 130-132	61,117,124, 130-132	260,540-541, 581,590-594	250,531-533, 571,580-584 593.0,593.1	250,531-533, 571,580-589
Complications of Pregnancy	140-150	140-150	640-689	630-678	630-676
Certain Diseases of Infancy	158-161	158-161	760-776	760-779	760-779
Motor Vehicle Accidents	206,208, 210-211	170	E810-E835	E810-E823	E810-E825
Other Accidents and Violence	77,163-176, 178-198, minus 206, 208,210,211	78,163-169, 171-176, 178-198	E800-E802 E840-E999	E800-E807 E825-E999	E800-E807 E826-E999
All Other and Unknown Causes	Residual	Residual	Residual	Residual	Residual

The basic data on deaths by cause, age and sex were obtained from the annual vital statistics series; three year aggregates of deaths (i.e. 1920,1921 and 1922 for the year of 1921) were used to derive the central death rates as is conventionally done in the construction of Canadian life tables. The corresponding census populations (i.e. 1921,...,1981) were used as the denominators to derive the central death rates (M_x s).

The table provided (on the previous page) summarizes the respective ICD codes, from the 4th revision to the 9th, corresponding to the cause of death categories considered for the construction of these tables.

Summary Tables

The summary tables are aimed at providing a synoptic view of the effects of different cause-deletion on longevity, survival probabilities to older ages and entropy values. The magnitude and direction of the movement of these indicators reflect the epidemiologic shifts in the cause-pattern of mortality that has taken place in Canada during the past six decades. These shifts appear to be consistent with the stages of epidemiologic transition enumerated by Omran.(6) The pattern of epidemiologic shift is from the predominance of infectious and parasitic diseases and diseases of the infancy in early decades, to degenerative diseases of the older ages in more recent ones.

Distribution of Deaths by Cause

The trends in the observed distribution of deaths by cause indicate a significant shift from the dominance of respiratory, infectious and infancy diseases in the early decades of the study, to chronic and degenerative diseases of older ages in recent years, such as neoplasms and diseases of the circulatory system. *(refer to Summary Table I)*

For example, respiratory tuberculosis accounted for 5% of annual deaths for males and 6% for females in 1921. This cause accounted for an insignificant amount of less than 0.1% of the deaths in 1981, for both males and females.

Other infectious diseases in Chapter I (of ICD 9) accounted for about 8% of annual deaths for both males and females in 1921 while in 1981 (and 1985) these accounted for less than one-half of one percent.

While deaths due to cardiovascular disease category accounted for nearly one in five deaths in 1921, the proportion doubled to more than two out of five deaths in 1981 (and in 1985). The proportion of deaths due to this category peaked around 1961 for males and around 1971 for females and has been declining since then.

The proportion of deaths due to cancer on the other hand has been increasing for both males and females during the past several decades. It accounted for less than one in ten deaths in 1921, by 1981 it constituted almost one in four deaths. Hence, neoplasms and cardiovascular category (which included causes of all circulatory system) claimed more than 2 out of 3 deaths annually in Canada in recent years while together they accounted for one in four deaths in 1921.

Distribution of Deaths by Cause,
Canada, Males, 1921 vs 1981

Cause of Death — Year

Tuberculois 1921 / 1981; Parasitic 1921 / 1981; Neoplasms 1921 / 1981; Cardio. 1921 / 1981; Influenza 1921 / 1981; Diarrheal 1921 / 1981; Degenerat. 1921 / 1981; Infancy 1921 / 1981; Motor Veh. 1921 / 1981; Accidents 1921 / 1981; All Other 1921 / 1981

Percent of Deaths
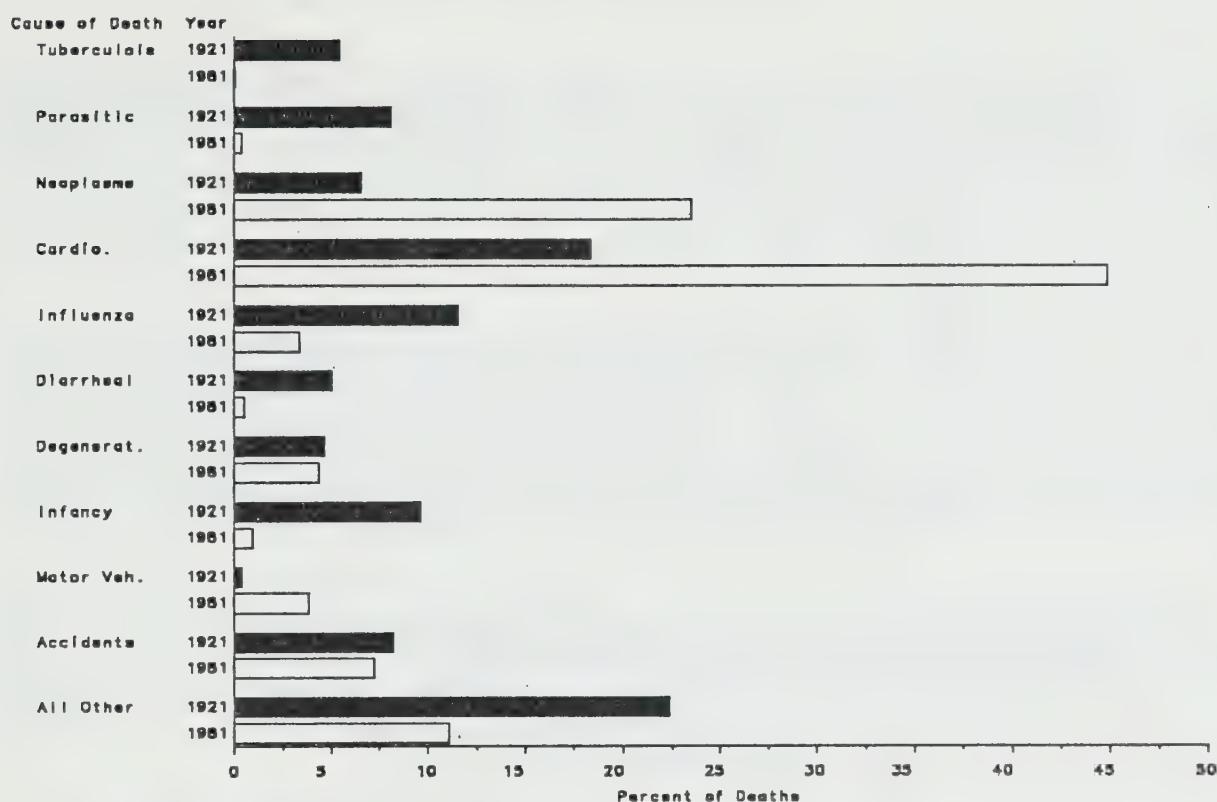
Distribution of Deaths by Cause,
Canada, Females, 1921 vs 1981

Cause of Death — Year

Tuberculois 1921 / 1981; Parasitic 1921 / 1981; Neoplasms 1921 / 1981; Cardio. 1921 / 1981; Influenza 1921 / 1981; Diarrheal 1921 / 1981; Degenerat. 1921 / 1981; Pregnancy 1921 / 1981; Infancy 1921 / 1981; Motor Veh. 1921 / 1981; Accidents 1921 / 1981; All Other 1921 / 1981

Percent of Deaths
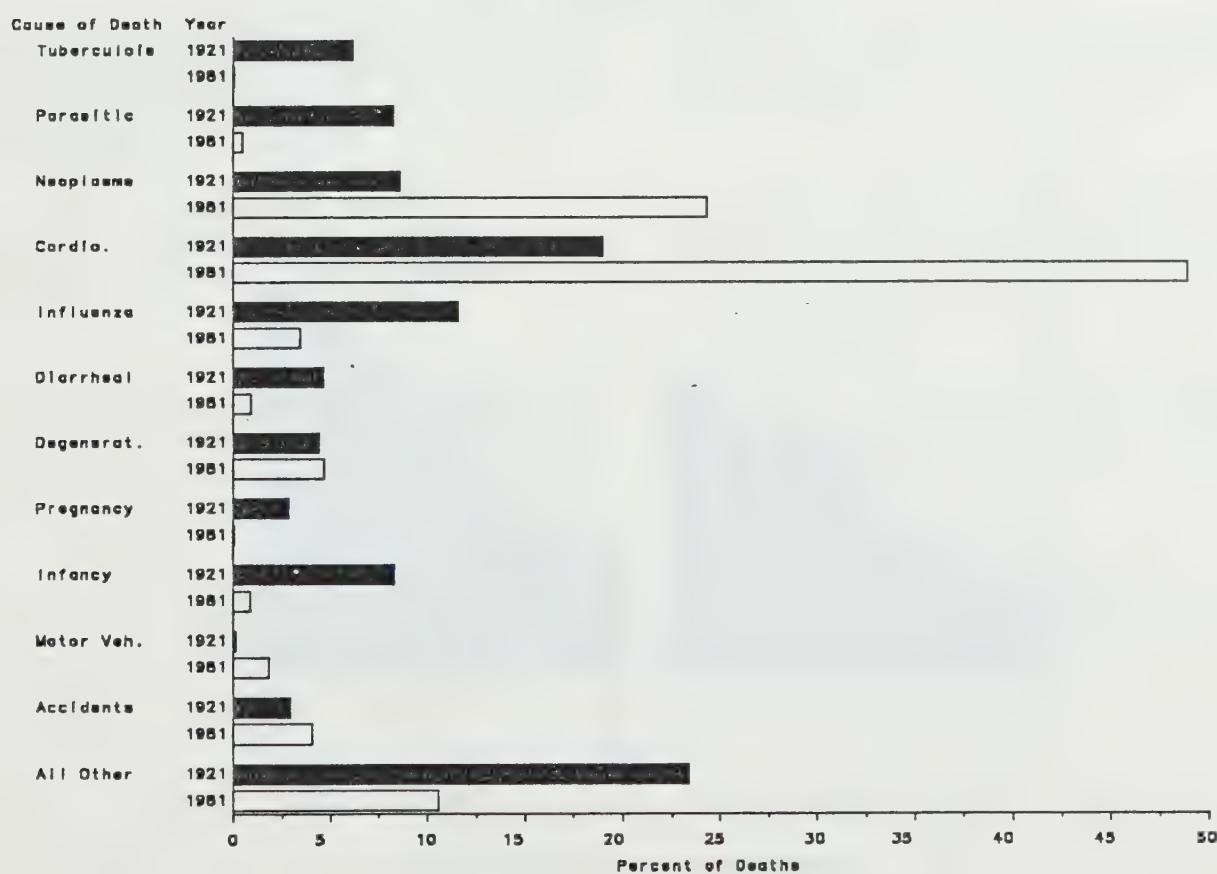
The proportion of deaths due to motor vehicle accidents has risen for both males and females - higher increases being registered for males than females. In 1981, the proportion was nearly 4% of annual deaths for males and one-half that for females. A slight decline is registered in this proportion in 1985 compared to 1981.

Life Expectancy at Birth

For every period considered from 1921 to 1981, the removal of cardiovascular disease category, without exception, gives the highest life expectancy at birth for both males and females. Moreover, the number of years added due to the removal of mortality due to this cause has generally increased with each passing decade. For example, in 1981, the removal of this category raised the life expectancy from about 72 years to more than 80 years for males; for females from 79 years to more than 92 years. *(refer to Summary Table II and the Chart below)*

While removal of neoplasm mortality raised the life expectancy at birth for males to about 75 years and for females to 83 years according to 1981 tables.

Deletion of mortality due to other disease categories under study has had relatively much less impact with respect to both males and females in recent years.

Number of Years of Life Gained, if Cardiovascular Disease is Deleted, Canada, 1921 to 1981
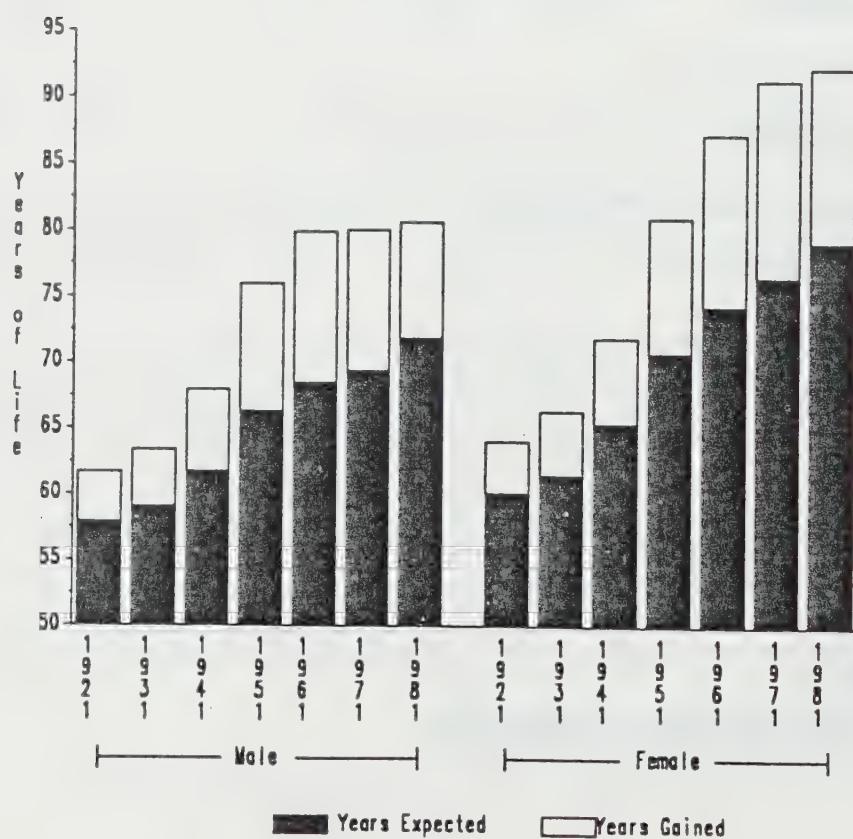
Years Gained in Life Expectancy at Birth

A complementary table to the one representing life expectancy at birth is the one showing the "life-expectancy gains" achieved if a particular cause were deleted. *(refer Summary Table III and the Chart on the following page)* The effect of a cause deletion on life expectancy gains at birth depends on:

(a) the proportion of persons who die by that cause;

(b) the distribution of these deaths by age;   and

(c) the number of additional years they would have lived if that cause had been eliminated

Summary Table III shows the gains from 1921 to 1981 for both males and females. The trends exhibited in this table clearly highlight the considerable shifts that have been recorded in the evolution of Canadian mortality during the past six decades. The following, in brief, summarizes the gains achieved from 1921 through 1981 by deletion of mortality due to various categories.

Situation according to the 1921 Schedule

(a) The deletion of Respiratory Tuberculosis would add 1.2 and 1.4 years respectively for male and female life expectancies.

(b) The deletion of Other Infectious and Parasitic Diseases would result in the increase of life expectancy of nearly 2 years for both males and females.

(c) The deletion of mortality due to Influenza, Pneumonia and Bronchitis would add around 2.5 years to life expactancy for both males and females.

(d) Certain Diseases of Infancy were some of the dominant causes of mortality and removal of these would have added 2.7 years and 2.1 years to male and female life expectancies respectively.

(e) Removal of the deaths due to complications of pregnancy would have added 0.6 of a year to the female life expectancy.

Situation according to the 1981 Schedule

By deleting Respiratory Tuberculosis, the gains achieved in life expectancy are almost insignificant (.01 of a year for males and .09 of a year for females.)

The gains achieved, as before, were very slight (.06 of a year for males and .15 of a year for females.)

The impact of these diseases is very much reduced and the removal of these would add about half a year or less to the life expectancy.

The impact is very much reduced and the deletion of mortality would add a negligible amount of 0.4 of a year or less to the life expectancy.

The effect is very much reduced and the increase in life expectancy would have been less than a tenth of a year.

Years of Life Expectancy Gained, after the Deletion of Selected Causes, Males, Canada, 1921 vs 1981
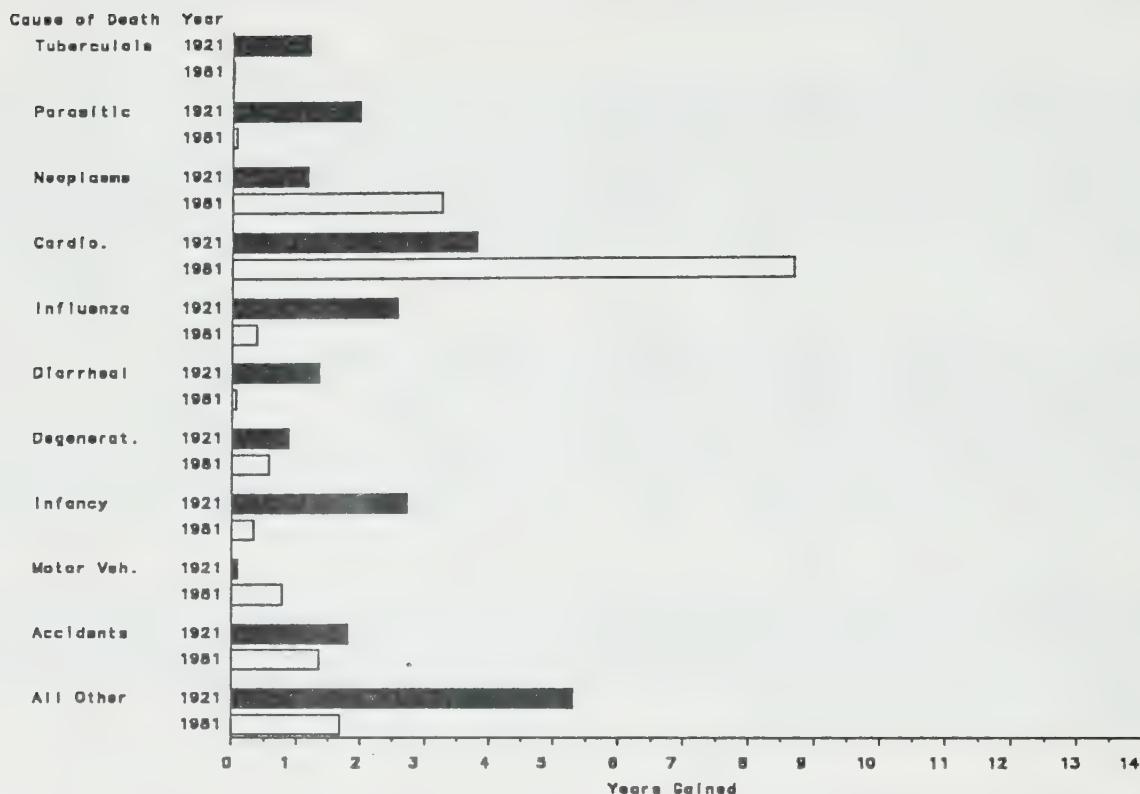
Years of Life Expectancy Gained, after the Deletion of Selected Causes, Females, Canada, 1921 vs 1981
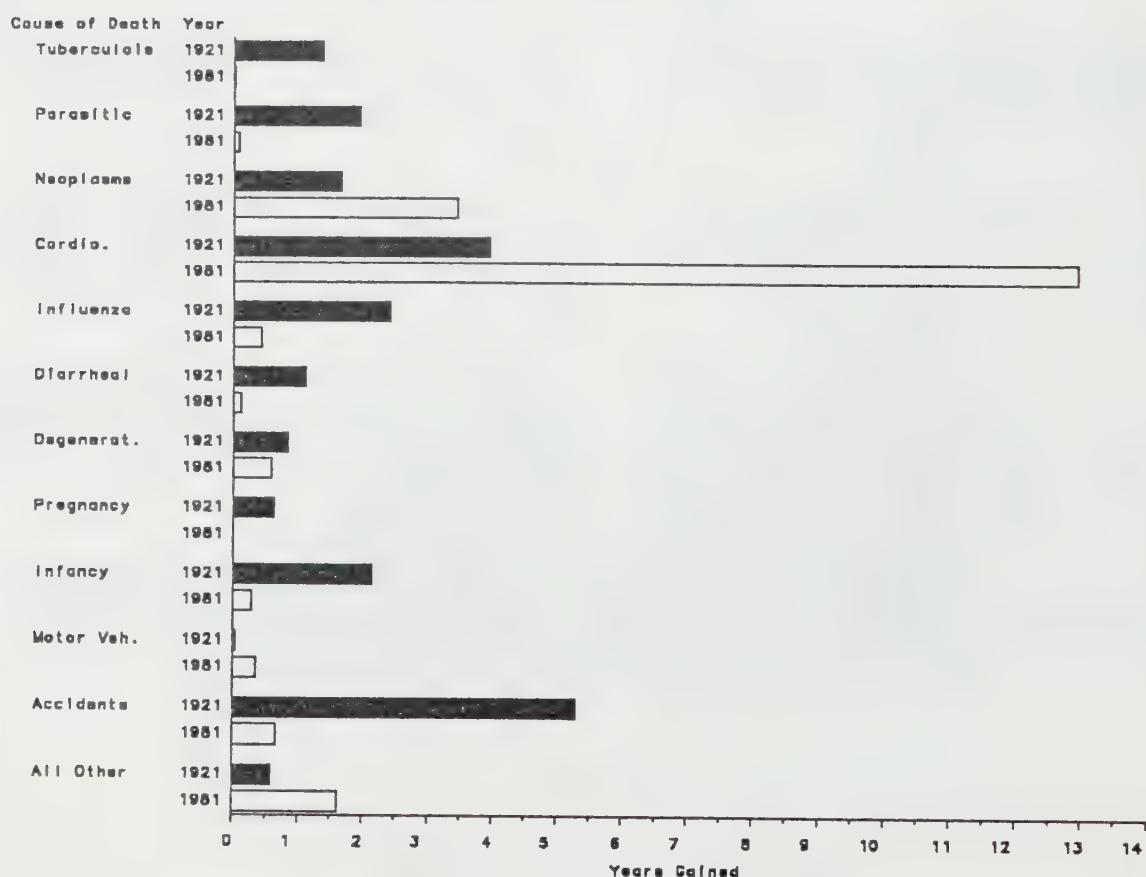
The examination of the situations seen on the previous page, undoubtedly shows that along with the observed overall mortality declines in recent years, there has been a gradual diminishing of the importance of Respiratory, Infectious, Parasitic and Infancy diseases as contributors to mortality. Hence, deletion of these would add less and less to the gains in life expectancy achieved in recent years.

On the other hand, by deleting causes such as cardiovascular diseases and neoplasms, the gains achieved are quite impressive and have been generally increasing over time.

For example, if the mortality due to cardiovascular disease category was deleted, it would have added nearly 4 years for both male and female life expectancy in 1921. The corresponding gains have gradually increased and peaked in 1961 for males and 1971 for females when the gains would have been 11.4 years for males and 14.7 years for females. Life expectancy gains declined since then due to the general improvement in cardiovascular mortality. In 1981, the deletion of this disease category would add nearly 9 years for males and 13 years for females.

The life expectancy gains achieved by deleting mortality due to neoplasms have been gradually increasing for both males and females; in 1921, they were 1.2 years for males and 1.7 years for females; in 1981, the corresponding gains were 3.2 and 3.5 years respectively.

One could clearly visualize that the pattern of life expectancy gains has shifted to reflect the realities of shifts in the cause-pattern of mortality.

Life Expectancies at Ages 40, 65 and 75

Considering that greater than 95% of the population now can expect to live beyond the age of 40, the bulk of any future gains in life expectancy will occur beyond the age of 40. Thus the three ages shown in the title were selected as ages that would show the emerging trends. However, the effect, in terms of the gains in expectation of life, due to the removal of several of the disease categories at age 40 tends to be negligible except for the following four categories:

1. cardiovascular disease category

2. neoplasms

3. certain degenerative diseases (such as diabetes, ulcers, etc:)

4. accidents

Even among this group, the categories (1) and (2) far outweigh others in their effects and impact on the life expectancy increases. *(refer to Summary Table IV(a),IV(b) and IV(c))*

For males the removal of cardiovascular disease mortality would add, at age 40, four years in 1921; this gradually increased to 12 years in 1961 and has since then declined to about 9 years in 1981. The deletion of neoplasms, on the other hand, would add 1.4 years in 1921 which gradually increased to about 3.2 years in 1981.

Gains in the Expectation of Life at Ages 40, 65 and 75, due to the Deletion of Selected Disease Categories, Canada, 1921
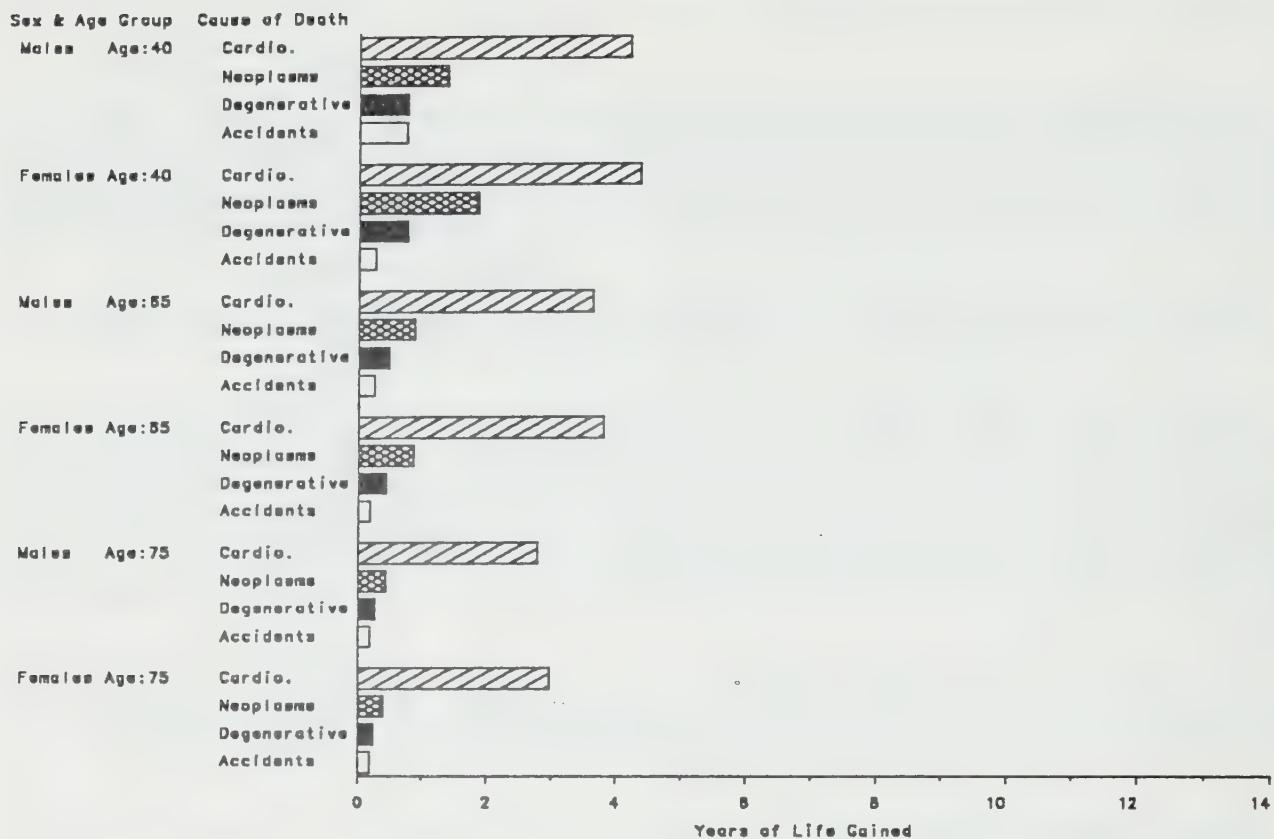
Gains in the Expectation of Life at Ages 40, 65 and 75, due to the Deletion of Selected Disease Categories, Canada, 1981
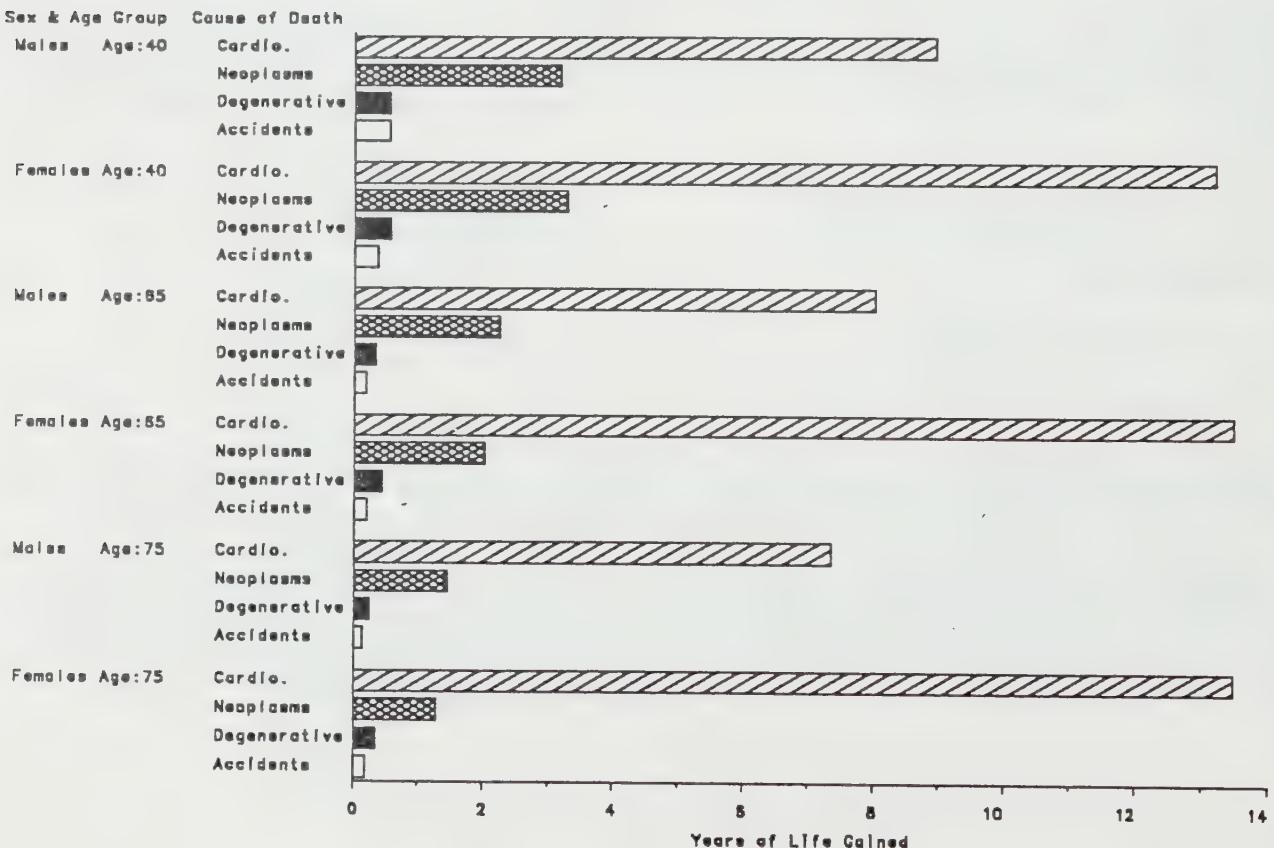
Again, **for males** at age 65 and 75, the deletion of cardiovascular disease would add 8 and 7 years respectively to the life expectancies according to 1981 tables; the corresponding gains with respect to neoplasms were 2.6 and 1.5 years. Other disease deletion appears to have much less effect relatively at ages 65 and 75 in terms of consequent increases in life expectancies.

Almost a similar pattern is observed with respect to gains in life expectancy **for females** at ages 40, 65 and 75. As before, the two cause of death categories that stand out are cardiovascular diseases and neoplasms. At age 40, the deletion of latter category would add 3.3 years in 1981 compared to less than 2 years in 1921.

The deletion of cardiovascular diseases on the other hand would add 13.2 years to the expectancy at age 40 in 1981; this has increased from 4.4 years in 1921 and peaked in 1971 to 15.1 years; it has declined somewhat since then.

At age 65 and 75,the deletion of cardiovascular category would add about 13.5 years to the expectancy at those ages while deletion of neoplasms mortality would increase the expectancies by 2.0 and 1.3 years, respectively.

Survival Probabilities to Ages 65, 75 and 85

From the gerentological perspective the retirement age of 65 and older ages of 75 and 85 are considered very important. Corresponding to the increases in the number of survivors to these older ages in the ordinary life tables during the past six decades, the numbers of survivors in cause-deleted tables show increases in varying degrees and some interesting trends.

In the ordinary life table, the number of survivors to age 65 has increased by 31% for males and 45% for females between 1921 and 1981.

The deletion of respiratory tuberculosis mortality, the survivors to age 65 increased by 4% for both males and females according to 1921 pattern; the deletion of the rest of the infections and parasitic diseases (Chapter I in ICD 9) would add about 5% to the survivors. A significant and noticeable change, however, was the fact that the removal of these causes added negligible amount of survivors in 1981. *(refer to Charts 1 to 6 as well as Summary Table V(a),V(b) and V(c))*).

On the other hand, the proportional addition to the survivors to age 65 due to the deletion of neoplasm mortality has consistently increased for males from 4.6% in 1921 to 7.1% in 1981; for females, however, the respective proportions slightly declined from 7.1% in 1921 to 6.2% in 1981, though in absolute terms, the number of survivors did show a slight increase.

The removal of cardiovascular category would have contributed approximately an additional 9% to the survivors for both males and females in 1921. The proportional increase **for males** nearly doubled in 1951 and 1961 and has declined since then to 11% in 1981. **For females** , the relative proportion of survivors rose to about 10% and then significantly declined to less than 4% in 1981.

Another noticeable change for males is due to the deletion of motor vehicle accidents; in 1921 the number of survivors to 65 would have increased by 0.3% while the same in 1981, would add as much as 2%.

The survivors to age 75 and 85, from the cause-deleted tables highlight the remarkable weight and importance of the cardiovascular disease category (Chapter VII in ICD 9) and neoplasms (Chapter II) in the currently prevailing regime of mortality. The survivors added when these categories are removed far outnumber the increases from all other disease categories put together. Sex-differential in favour of females, among the survivors to age 75 and 85, is quite significant in cause-deleted life tables in recent years reflecting the pattern observed in the ordinary life tables.

Entropy Values (H)

The table on the following page, gives the values of H, the entropy, at birth for both males and females with respect to the cause-deleted tables from 1921 to 1981. Entropy H is defined by Keyfitz(2) as follows:

$$H = -\frac{\int_0^w \ln(l_x) \cdot l_x \cdot d_x}{\int_0^w l_x \cdot d_x}$$

Where w is the terminal age and l_x the life table survivor column. In other words, it represents the value of a weighted mean of the logarithm of the survivors column with the weights being the stationary population of the corresponding column of the life table. (The formula above is for the continuous case. For the discrete case, as in the present context, the integral sign would need to be replaced by a summation ($\sum$) sign).

What the index H represents, quantitatively, is the amount of improvement in percentage terms in the life expectancy at birth if a 1% improvement in mortality or age-specific death rates takes place at all ages.(Keyfitz(2))

In case of the entropy values presented in the table, what a particular value of H represents is that, after deletion of that corresponding cause-category, a further improvement of 1% in mortality at all ages, would add H % to the life expectancy at birth from that cause-deleted life table.

As the number of survivors to older ages has increased and as life expectancy at birth has improved in cause-deleted tables over the past decades, the values of H have consistently declined with respect to each cause. This decreasing value of H implies that further improvement in mortality or age-specific death rates will contribute less and less to the increases in life expectancy at birth in cause-deleted life tables.

The Value of Entropy (H) for Cause Deleted Life Tables

Cause of Death Categories	Males						
	1921	1931	1941	1951	1961	1971	1981
No Cause Deleted	0.319264	0.302412	0.251106	0.192014	0.168254	0.160309	0.140193
Respiratory Tuberculois	0.304376	0.288543	0.241092	0.187467	0.168515	0.160169	0.140164
Other Infectious and Parasitic Diseases	0.290971	0.283658	0.238274	0.187736	0.167029	0.159061	0.139877
Malignant and Benign Neoplasms	0.314962	0.296481	0.244510	0.184706	0.161231	0.152145	0.129577
Cardiovascular Disease	0.314134	0.303683	0.251976	0.191279	0.170244	0.166638	0.142867
Influenza,Pneumonia, Bronchitis	0.292930	0.276633	0.230976	0.185177	0.165976	0.159822	0.141619
Diarrhea,Gastritis,Enteritis	0.297631	0.276920	0.239945	0.189014	0.167713	0.159914	0.140121
Certain Degenerative Diseases	0.313826	0.298446	0.249055	0.189372	0.167111	0.158294	0.138396
Complications of Pregnancy	0.319264	0.302412	0.251106	0.192014	0.168254	0.160309	0.140193
Certain Diseases of Infancy	0.274074	0.254026	0.218089	0.169247	0.152072	0.149813	0.135529
Motor Vehicle Accidents	0.318006	0.298016	0.245424	0.184361	0.159600	0.149029	0.131413
Other Accidents and Violence	0.297666	0.282691	0.233192	0.177000	0.155455	0.145109	0.127086
All Other and Unknown Causes	0.286912	0.274245	0.226249	0.177923	0.159012	0.151318	0.132760

Cause of Death Categories	Females						
	1921	1931	1941	1951	1961	1971	1981
No Cause Deleted	0.290937	0.273418	0.217106	0.158529	0.129847	0.120919	0.105515
Respiratory Tuberculois	0.273800	0.255136	0.205286	0.154071	0.129464	0.120793	0.105491
Other Infectious and Parasitic Diseases	0.263448	0.254656	0.205541	0.154565	0.128353	0.119756	0.105094
Malignant and Benign Neoplasms	0.281209	0.261178	0.203163	0.143634	0.113385	0.102822	0.085608
Cardiovascular Disease	0.286140	0.273296	0.216663	0.159457	0.134756	0.132220	0.113730
Influenza,Pneumonia, Bronchitis	0.269789	0.253501	0.201534	0.152433	0.127096	0.119754	0.106112
Diarrhea,Gastritis,Enteritis	0.274405	0.254648	0.209137	0.156076	0.128879	0.120534	0.105388
Certain Degenerative Diseases	0.285715	0.268424	0.212968	0.155952	0.127473	0.118396	0.103464
Complications of Pregnancy	0.282719	0.266023	0.212199	0.156604	0.129040	0.120689	0.105459
Certain Diseases of Infancy	0.256320	0.236562	0.194089	0.142015	0.117509	0.113248	0.102034
Motor Vehicle Accidents	0.290543	0.271796	0.215173	0.155935	0.126479	0.116306	0.101901
Other Accidents and Violence	0.285349	0.269123	0.212759	0.154924	0.126118	0.114965	0.100814
All Other and Unknown Causes	0.262400	0.248899	0.194234	0.144197	0.119022	0.111069	0.097508

Note: For the corresponding ICD codes refer to the table, found on page 5, which describes the 'Cause of Death Categories'

For example, a 10% improvement in the age-specific death rates at all ages in a life table with the diseases of the cardiovascular system removed would have improved life expectancy **for males** by 3.1% in 1921; the corresponding improvement in 1981 would result in the increase of life expectancy by 1.4%. **For females** , this would have been 2.9% in 1921 while in 1981 the improvement would have meant 1.1%.

In general, it is observed that the removal of a cause, diminishes the value of H. This indicates that the consequence of removing that cause results in a continually diminished increase in the life-expectancy of any further improvements in the age-specific death rates. It is not difficult to visualize why the situation would be so. But there are some exceptions, such as perhaps observed in the Taeuber paradox, with respect to age-specific mortality rates.

In the table on the previous page, it may be observed that for 1981, all values of H for cause-deleted tables are lower compared to the H for "no cause-deleted" category except for the following two disease categories.

(a) Cardiovascular Diseases; and

(b) Influenza, Pneumonia and Bronchitis

The similiar pattern is observed for both males and females. The values of H in these cases show a slight increase compared to the corresponding values from the "no cause-deleted" table; one of the pertinent explanation is that the age-distribution of the deaths from these causes,(or when these causes are removed), is significantly different from that with respect to other causes or from the no cause-deleted category. The age-distribution of deaths from these categories is slightly in favour of the older ages; and hence by removing these deaths,we render the distribution somewhat younger. The relative higher value of H means that after the deletion of deaths due to these categories, any further improvement in the age-specific death rates will add relatively greater increases to the life expectancy reached in these cause-deleted tables.

As is evident in the conventional period life tables,the values of H are consistently lower **for females** than **for males** as a consequence of the survival curve **for females** tending towards being more rectangular(5) than for males, thus reflecting their favourable differential with respect to longevity and survival to older ages.

Tests of Consistency for Cause-deleted Tables

In order to provide a check on whether the various cause-deleted tables that are derived are consistent the following procedure may be adopted.

Suppose there are 'n' cause categories for which cause-deleted life tables have been constructed.

Let l_x^{-1} (i = 1 to n) represent the survivor to exact age 'x' from the ith cause-deleted table, x extending to all ages.

Let

$$P_x = \prod_{i=1}^{n} \left(l_x^{-i} \right)$$

$$\dots (1)$$

Since each of the cause-deleted l_x (ie l_x^{-i}) ought to be equal to the l_x for the corresponding ordinary life table (without deleting any cause) divided by the l_x for that cause alone (ie l_x^i), we have

$$l_x^{-i} = \left(\frac{l_x}{l_x^i} \right)$$

$$\dots (2)$$

Hence, it follows that $(n\text{-}1)^{th}$ root of P_x should be equal to l_x from the ordinary life table. ie.

$$\frac{(P_x)^{\frac{1}{n-1}}}{l_x} \approx 1.0$$

$$\dots (3)$$

for all x and where l_x stands for the survivors to exact-age x of the ordinary life table. The (3) above provides us with a test of consistency of the cause-deleted life tables.

In this study, we have a set of 12 cause-deleted tables for females and 11 for males. Let $^m l_x^{-i}$ and $^f l_x^{-i}$ be survivors to exact age x of the ith cause-deleted tables for males and females respectively and let $^m l_x$ and $^f l_x$ the corresponding number of survivors to exact age x from the ordinary life table (without deletion of any cause).

Then, if

$$^m P_x = \prod_{i=1}^{11} \left({}^m l_x^{-i} \right)$$

and

$$^f P_x = \prod_{i=1}^{12} \left({}^f l_x^{-i} \right)$$

$$\dots (4)$$

Results of the Test for the Consistency of the Cause-Deleted Life Tables,
1921-1981, Canada, Males

Age Groups	Year: 1921	Year: 1931	Year: 1941	Year: 1951	Year: 1961	Year: 1971	Year: 1981
Under 1	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
1 - 5	1.0000001	1.0000005	1.0000007	0.9999997	1.0000402	1.0000558	1.0000190
5 - 10	0.9999947	1.0000019	1.0000005	1.0000082	1.0000487	1.0000657	1.0000226
10 - 15	0.9999987	1.0000063	1.0000048	1.0000019	1.0000522	1.0000724	1.0000253
15 - 20	0.9999954	1.0000088	1.0000065	1.0000016	1.0000550	1.0000796	1.0000320
20 - 25	0.9999966	1.0000098	1.0000054	1.0000044	1.0000661	1.0000989	1.0000424
25 - 30	0.9999954	1.0000040	0.9999976	1.0000047	1.0000941	1.0001238	1.0000540
30 - 35	0.9999979	0.9999950	0.9999874	1.0000089	1.0001137	1.0001466	1.0000645
35 - 40	0.9999985	1.0000037	0.9999803	1.0000092	1.0001324	1.0001699	1.0000738
40 - 45	0.9999969	1.0000032	0.9999822	1.0000125	1.0001499	1.0001877	1.0000853
45 - 50	0.9999990	1.0000061	0.9999803	1.0000126	1.0001658	1.0002086	1.0000952
50 - 55	1.0000028	1.0000033	0.9999753	1.0000038	1.0001905	1.0002319	1.0001050
55 - 60	1.0000062	0.9999645	0.9999717	1.0000076	1.0002463	1.0002711	1.0001174
60 - 65	1.0000017	0.9999625	1.0002008	1.0000178	1.0003258	1.0003105	1.0001327
65 - 70	0.9999945	0.9999617	1.0002008	1.0000186	1.0004189	1.0003645	1.0001433
70 - 75	0.9999905	0.9999672	1.0002025	1.0000177	1.0005657	1.0004723	1.0001450
75 - 80	0.9999927	0.9999470	1.0001984	1.0000148	1.0006587	1.0005069	1.0001156
80 - 85	0.9999890	0.9999495	1.0002023	1.0000131	1.0007523	1.0005333	1.0000583
85+	0.9999845	0.9999511	1.0002061	1.0000138	1.0008788	1.0004881	0.9999215

Results of the Test for the Consistency of the Cause-Deleted Life Tables,
1921-1981, Canada, Females

Age Groups	Year: 1921	Year: 1931	Year: 1941	Year: 1951	Year: 1961	Year: 1971	Year: 1981
Under 1	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000	1.0000000
1 - 5	0.9999997	1.0000077	1.0000007	1.0000010	1.0000309	1.0000329	1.0000125
5 - 10	0.9999993	1.0000059	0.9999987	1.0000005	1.0000372	1.0000406	1.0000155
10 - 15	0.9999979	1.0000049	1.0000037	0.9999983	1.0000395	1.0000451	1.0000177
15 - 20	0.9999968	0.9999963	1.0000011	0.9999970	1.0000414	1.0000486	1.0000187
20 - 25	0.9999926	0.9999956	0.9999988	0.9999936	1.0000453	1.0000550	1.0000218
25 - 30	1.0000002	0.9999919	1.0000025	0.9999991	1.0000489	1.0000614	1.0000261
30 - 35	0.9999964	0.9999953	0.9999952	0.9999981	1.0000545	1.0000667	1.0000310
35 - 40	1.0000000	0.9999983	0.9999914	0.9999912	1.0000613	1.0000736	1.0000343
40 - 45	0.9999912	0.9999943	0.9999893	0.9999938	1.0000653	1.0000785	1.0000409
45 - 50	1.0000003	0.9999967	0.9999896	0.9999919	1.0000729	1.0000880	1.0000467
50 - 55	0.9999958	0.9999974	0.9999854	0.9999856	1.0000851	1.0000975	1.0000550
55 - 60	0.9999933	0.9999963	0.9999807	0.9999810	1.0000986	1.0001152	1.0000623
60 - 65	0.9999937	1.0000002	0.9999771	0.9999766	1.0001195	1.0001392	1.0000760
65 - 70	0.9999915	1.0000004	0.9999836	0.9999753	1.0001541	1.0001763	1.0000946
70 - 75	1.0000017	1.0000013	0.9999850	0.9999775	1.0001863	1.0002202	1.0001240
75 - 80	1.0000034	1.0000034	0.9999826	0.9999725	1.0002288	1.0002940	1.0001744
80 - 85	1.0000051	1.0000039	0.9999881	0.9999654	1.0003059	1.0003728	1.0001970
85+	1.0000022	0.9999991	0.9999859	0.9999551	1.0004079	1.0004605	1.0001922

We have from (3)

$$\frac{\left({}^{m}P_x\right)^{\frac{1}{10}}}{{}^{m}l_x} = 1.0$$

... (5)

for all x for males; and

$$\frac{\left({}^{f}P_x\right)^{\frac{1}{11}}}{{}^{f}l_x} = 1.0$$

... (6)

for all x for females.

The table on the previous page, shows the values of (5) and (6) for the years 1921 to 1981 and for all ages. As can be observed, the values are very close to unity in almost all cases showing the internal consistency and accuracy of these derived cause-deleted tables.

Derivation of Cause-specific Tables

For the projection of future mortality, taking into consideration the evolving cause-pattern and epidemiologic shifts, it is sometimes necessary to have cause-specific tables instead of cause-deleted tables. The derivation of cause-specific tables from the cause-deleted ones is a simple exercise. It is suffice to illustrate the derivation of the survivor column for one specific cause.

Suppose; if l^i_x is the number of survivors to exact age x from the ith cause-specific life table; l^{-i}_x is the corresponding number from the ith cause-deleted table and l_x is the corresponding number from the ordinary life table with no cause-deleted,

Then, (where l_x and l^{-i}_x are already available)

$$l^i_x = \frac{l_x}{l^{-i}_x}$$

with the availability of l^i_x s, other columns of the tables could be derived and conveniently employed for the projections of mortality.

Concluding Remarks

In the foregoing we have examined briefly the cause-deleted tables for Canada for a set of cause of death categories for males and females for each decade over the past six decades. We have analysed some of the derived measures and parameters like entropy values, life-expectancies at selected ages and survival probabilities to senior ages 65, 75 and 85.

An indispensable conclusion one arrives at is that there have been significant epidemiologic shifts in the cause-pattern of mortality and their consequent impact on longevity and survival probabilities to older ages. With the recorded mortality declines in recent years, the importance of causes with respect to cardiovascular and neoplasms categories stand out in comparison to the effect of other diseases as increasingly contributing to mortality in recent years.

The cause-deleted life tables provide us with several quantitative measures to judge the relative importance of various disease-categories as "underlying" causes of mortality in cross-sectional as well as a time-series perspective. On the flip side, these tables should also help in the examination of some of the health-care and health resources priorities.

The ease with which the cause-deleted tables could be transformed into cause-specific tables, should augment their utility in effectively and realistically projecting future mortality. This will not only help in the study of evolving mortality pattern per se but also to provide essential input for the population projections.

Refinement in the use of cause-categories for constructing the tables and those for classifying the diseases should further help in fine tuning the measurements and in quantitatively assessing the impact of temporal epidemiologic shifts.

The detailed tables for an uninterrupted period of six decades, with identical causes deleted, should aid further research in demographic, epidemiologic and health areas by providing basic input to build useful analytical indicators.

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Number of Survivors of the Birth Cohort, After the Deletion of Selected Causes, Males, Age 65

CAUSES ◆–◇–◆ Cardiovascular   ⊖–⊖–⊖ Neoplasms   ⊟–⊟–⊟No Cause Removed
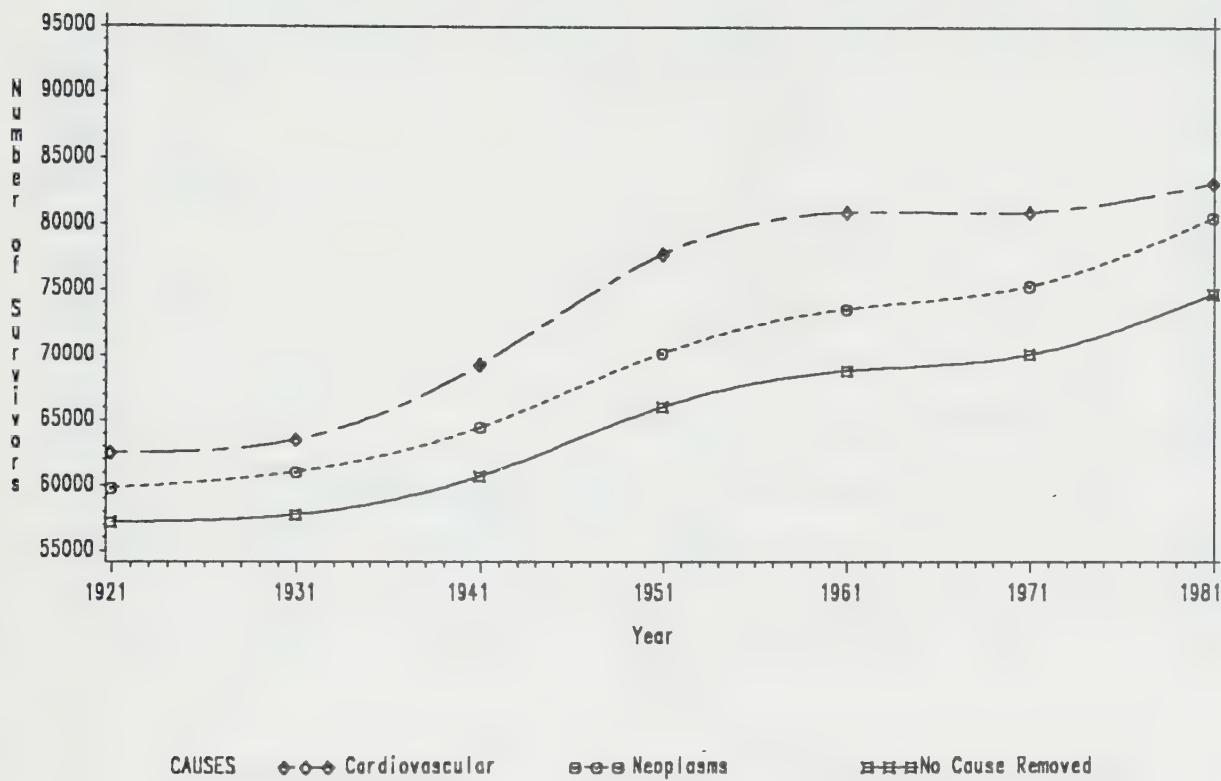
Chart 2:

Number of Survivors of the Birth Cohort, After the Deletion of Selected Causes, Females, Age 65

CAUSES ◆–◇–◆ Cardiovascular   ⊖–⊖–⊖ Neoplasms   ⊟–⊟–⊟No Causes Remove
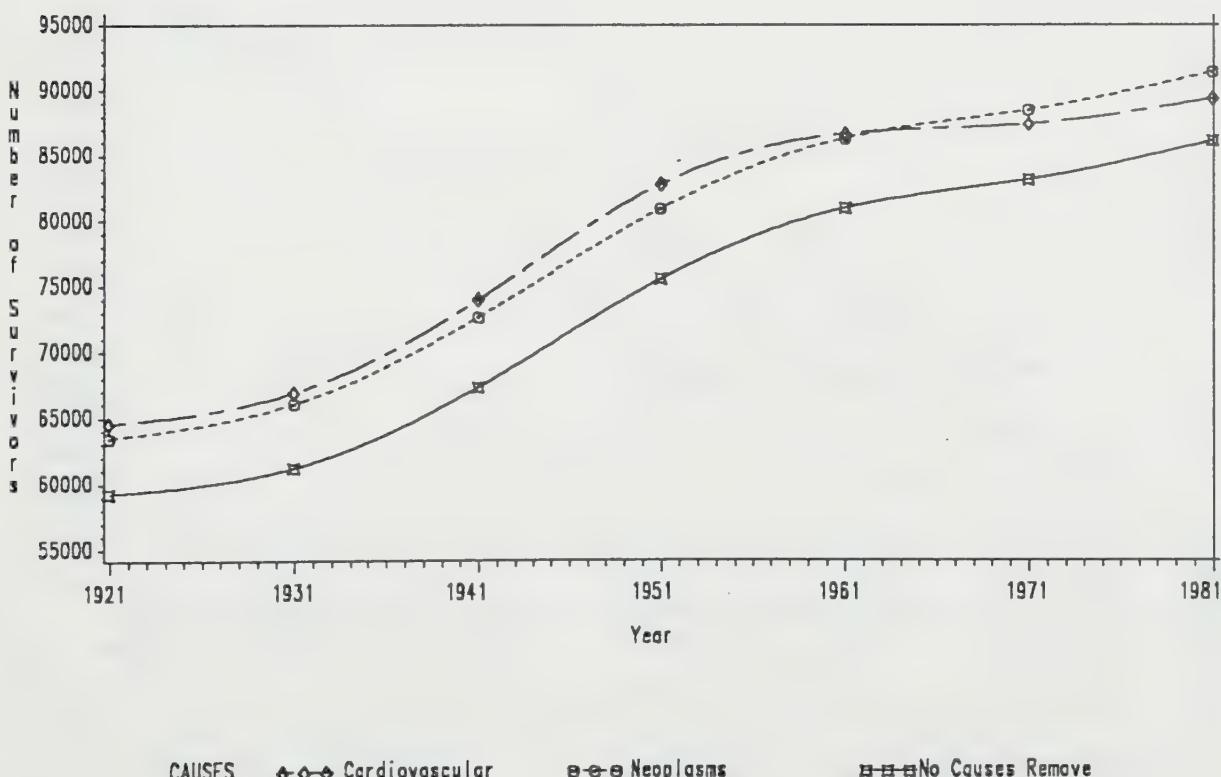
Chart 3: Number of Survivors of the Birth Cohort, After the Deletion of Selected Causes, Males, Age 75
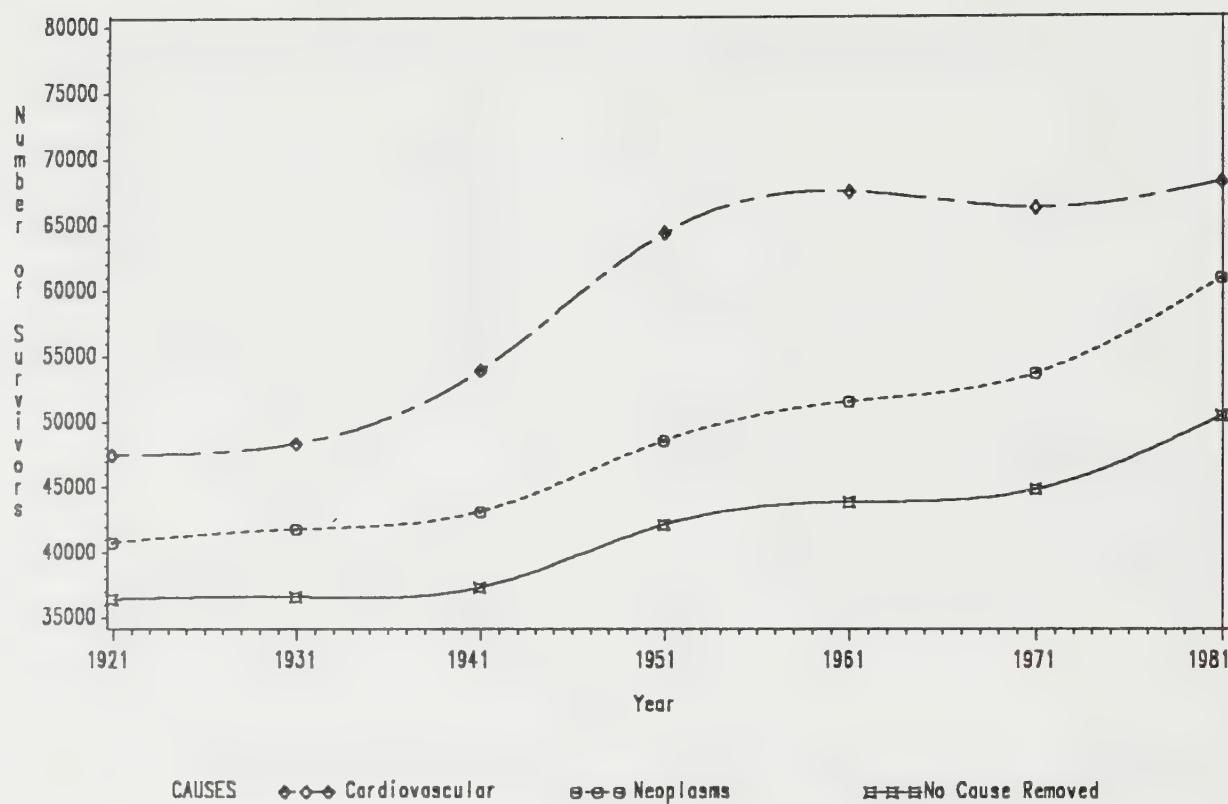
Chart 4: Number of Survivors of the Birth Cohort, After the Deletion of Selected Causes, Females, Age 75
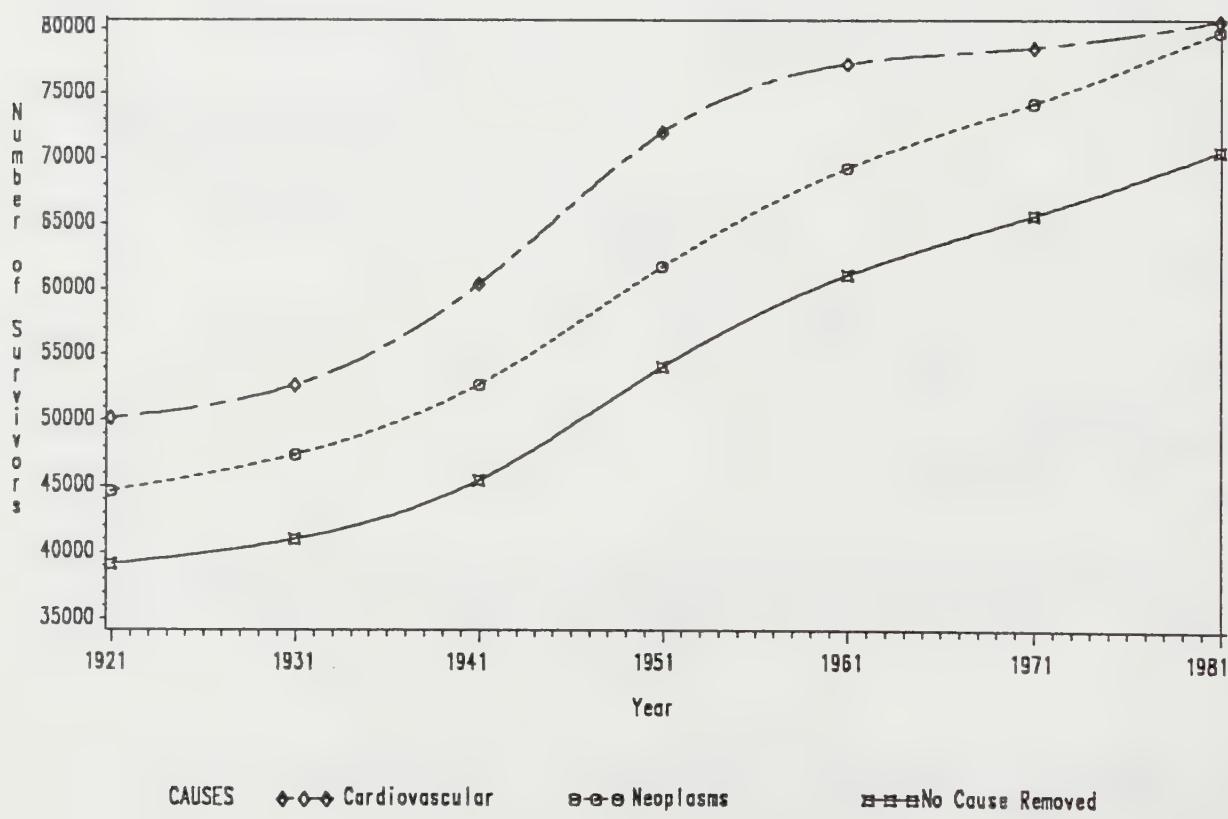
Number of Survivors of the Birth Cohort, After the Deletion of Selected Causes, Males, Age 85
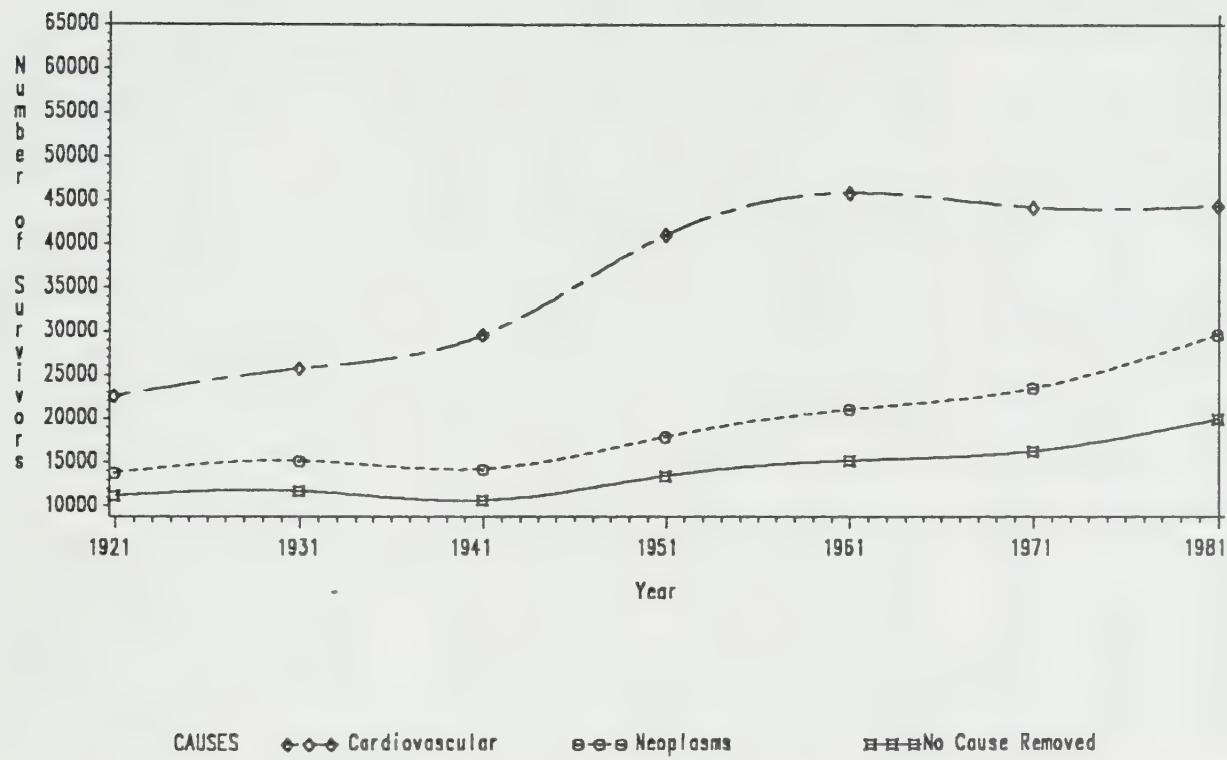
CAUSES ◆-◇-◆ Cardiovascular ⊖-⊖-⊖ Neoplasms ⊞-⊞-⊞No Cause Removed

Number of Survivors of the Birth Cohort, After the Deletion of Selected Causes, Females, Age 85

CAUSES ◆-◇-◆ Cardiovascular ⊖-⊖-⊖ Neoplasms ⊞-⊞-⊞No Cause Removed
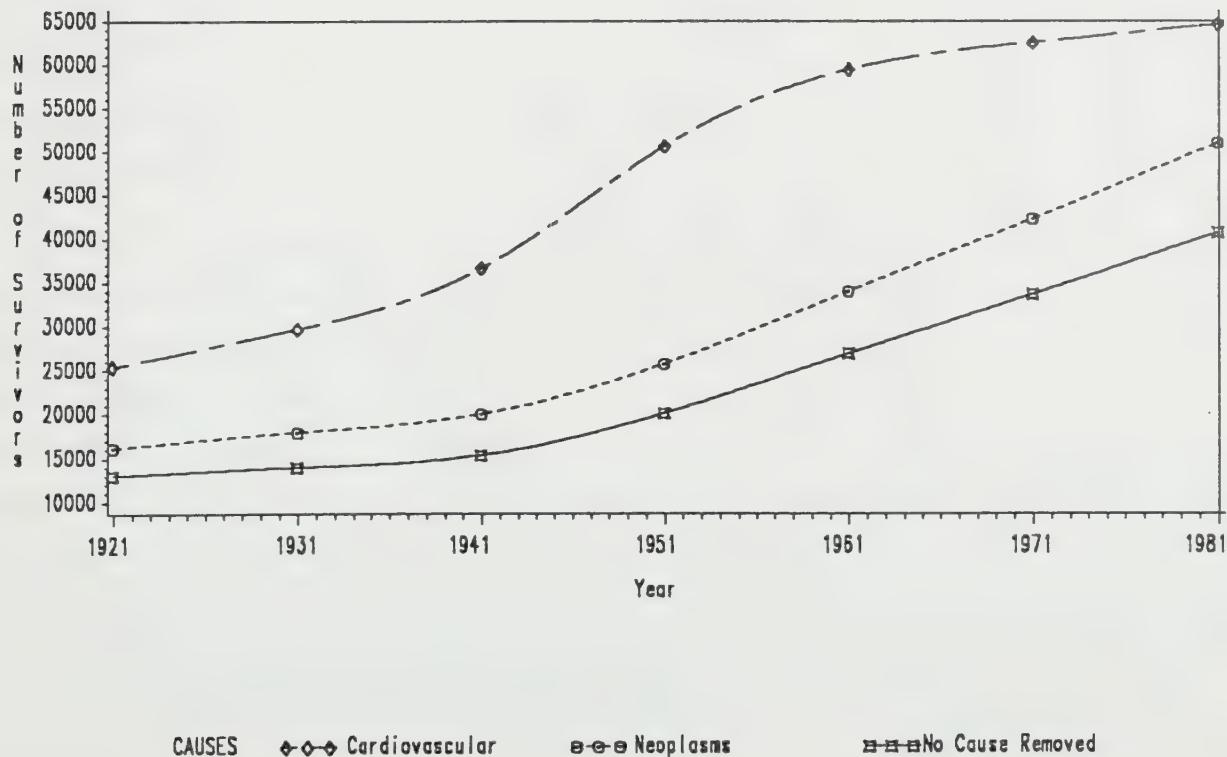
Percentage Distribution of Death by Causes and Sex, Canada, 1921 to 1985

Cause of Death Categories	Males							
	1921	1931	1941	1951	1961	1971	1981	1985
Respiratory Tuberculois	5.42	5.29	4.14	2.41	0.58	0.23	0.08	0.07
Other Infectious and Parasitic Diseases	8.05	5.49	3.81	1.54	1.23	0.86	0.39	0.48
Malignant and Benign Neoplasms	6.56	9.03	11.31	13.19	15.88	18.87	23.43	25.58
Cardiovascular Disease	18.29	21.98	33.46	44.90	49.00	48.13	44.83	42.14
Influenza,Pneumonia, Bronchitis	11.52	10.02	7.51	5.92	4.67	4.89	3.34	3.39
Diarrhea,Gastritis,Enteritis	5.01	5.25	2.29	0.93	0.59	0.34	0.49	0.47
Certain Degenerative Diseases	4.59	6.89	9.01	4.49	3.72	3.99	4.34	4.28
Complications of Pregnancy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Certain Diseases of Infancy	9.57	9.19	5.85	5.99	5.10	2.14	0.94	0.71
Motor Vehicle Accidents	0.41	1.75	2.25	2.89	3.57	4.58	3.81	3.00
Other Accidents and Violence	8.21	7.85	7.45	6.64	6.30	7.24	7.26	6.66
All Other and Unknown Causes	22.35	17.26	12.92	11.09	9.36	8.74	11.07	13.23
Total of All Causes	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

	Females							
	1921	1931	1941	1951	1961	1971	1981	1985
Respiratory Tuberculois	6.16	6.64	4.64	2.12	0.38	0.15	0.05	0.04
Other Infectious and Parasitic Diseases	8.26	5.63	3.47	1.54	1.11	0.85	0.48	0.54
Malignant and Benign Neoplasms	8.60	11.27	14.10	16.12	18.42	21.03	24.26	25.89
Cardiovascular Disease	18.97	23.40	33.84	45.38	49.78	50.73	48.85	45.74
Influenza,Pneumonia, Bronchitis	11.55	10.51	7.78	6.60	4.68	4.37	3.45	3.78
Diarrhea,Gastritis,Enteritis	4.61	4.56	1.92	1.03	0.73	0.55	0.91	0.90
Certain Degenerative Diseases	4.39	7.36	10.03	5.05	4.26	4.42	4.67	4.76
Complications of Pregnancy	2.79	2.52	1.76	0.76	0.35	0.10	0.03	0.02
Certain Diseases of Infancy	8.28	7.97	4.95	5.47	4.97	2.05	0.86	0.66
Motor Vehicle Accidents	0.15	0.69	0.80	1.11	1.69	2.37	1.86	1.53
Other Accidents and Violence	2.91	2.94	3.58	3.35	3.53	4.45	4.04	3.58
All Other and Unknown Causes	23.33	16.53	13.15	11.48	10.08	8.94	10.56	12.55
Total of All Causes	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Note: For the corresponding ICD codes refer to the table, found on page 5,
which describes the 'Cause of Death Categories'

Summary Table: II

Life Expectancy at Birth if Selected Causes were Deleted, by Sex, Canada, 1921 to 1981

Cause of Death Categories	Males						
	1921	1931	1941	1951	1961	1971	1981
No Cause Deleted	57.94	59.05	61.76	66.33	68.44	69.40	71.86
Respiratory Tuberculois	59.14	60.18	62.64	66.80	68.56	69.44	71.87
Other Infectious and Parasitic Diseases	59.92	60.40	62.74	66.68	68.69	69.56	71.92
Malignant and Benign Neoplasms	59.10	60.53	63.42	68.22	70.79	72.12	75.10
Cardiovascular Disease	61.72	63.40	67.97	75.96	79.85	80.00	80.55
Influenza,Pneumonia, Bronchitis	60.51	61.30	63.56	67.32	69.15	70.05	72.23
Diarrhea,Gastritis,Enteritis	59.30	60.65	62.50	66.55	68.59	69.47	71.92
Certain Degenerative Diseases	58.80	60.17	63.01	66.97	68.99	69.96	72.42
Complications of Pregnancy	57.94	59.05	61.76	66.33	68.44	69.40	71.86
Certain Diseases of Infancy	60.66	62.01	63.86	67.88	69.63	70.14	72.19
Motor Vehicle Accidents	58.04	59.42	62.25	67.00	69.30	70.40	72.64
Other Accidents and Violence	59.75	60.73	63.38	67.76	69.79	70.90	73.21
All Other and Unknown Causes	63.24	62.82	64.50	68.26	69.98	70.87	73.55

Cause of Death Categories	Females						
	1921	1931	1941	1951	1961	1971	1981
No Cause Deleted	60.10	61.53	65.43	70.73	74.26	76.45	79.06
Respiratory Tuberculois	61.48	62.98	66.41	71.14	74.32	76.53	79.15
Other Infectious and Parasitic Diseases	62.05	62.89	66.30	71.06	74.44	76.65	79.21
Malignant and Benign Neoplasms	61.76	63.56	67.68	73.17	76.95	79.54	82.59
Cardiovascular Disease	64.06	66.32	71.85	80.90	87.15	91.17	92.11
Influenza,Pneumonia, Bronchitis	62.52	63.75	67.05	71.74	74.89	77.10	79.56
Diarrhea,Gastritis,Enteritis	61.22	62.78	65.99	70.93	74.38	76.59	79.25
Certain Degenerative Diseases	60.93	62.77	66.84	71.40	74.82	77.08	79.72
Complications of Pregnancy	60.72	62.10	65.81	70.89	74.32	76.53	79.15
Certain Diseases of Infancy	62.24	63.87	66.97	71.92	75.19	77.10	79.42
Motor Vehicle Accidents	60.13	61.67	65.60	70.96	74.58	76.94	79.49
Other Accidents and Violence	60.69	62.09	66.04	71.26	74.80	77.25	79.79
All Other and Unknown Causes	65.39	64.97	68.04	72.62	75.77	77.95	80.76

Note: For the corresponding ICD codes refer to the table, found on page 5,
which describes the 'Cause of Death Categories'

Summary Table: III

<u>Years of Life Expectancy Gained at Birth if Selected Causes were Deleted,</u>
<u>by Sex, Canada, 1921 to 1981</u>

	Males						
Cause of Death Categories	1921	1931	1941	1951	1961	1971	1981
No Cause Deleted	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Respiratory Tuberculois	1.20	1.13	0.88	0.47	0.12	0.04	0.01
Other Infectious and Parasitic Diseases	1.98	1.35	0.98	0.35	0.25	0.16	0.06
Malignant and Benign Neoplasms	1.16	1.48	1.66	1.89	2.35	2.72	3.24
Cardiovascular Disease	3.78	4.35	6.21	9.63	11.41	10.60	8.69
Influenza,Pneumonia, Bronchitis	2.57	2.25	1.80	0.99	0.71	0.65	0.37
Diarrhea,Gastritis,Enteritis	1.36	1.60	0.74	0.22	0.15	0.07	0.06
Certain Degenerative Diseases	0.86	1.12	1.25	0.64	0.55	0.56	0.56
Complications of Pregnancy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Certain Diseases of Infancy	2.72	2.96	2.10	1.55	1.19	0.74	0.33
Motor Vehicle Accidents	0.10	0.37	0.49	0.67	0.86	1.00	0.78
Other Accidents and Violence	1.81	1.68	1.62	1.43	1.35	1.50	1.35
All Other and Unknown Causes	5.30	3.77	2.74	1.93	1.54	1.47	1.69

	Females						
Cause of Death Categories	1921	1931	1941	1951	1961	1971	1981
No Cause Deleted	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Respiratory Tuberculois	1.38	1.45	0.98	0.41	0.06	0.08	0.09
Other Infectious and Parasitic Diseases	1.95	1.36	0.87	0.33	0.18	0.20	0.15
Malignant and Benign Neoplasms	1.66	2.03	2.25	2.44	2.69	3.09	3.53
Cardiovascular Disease	3.96	4.79	6.42	10.17	12.89	14.72	13.05
Influenza,Pneumonia, Bronchitis	2.42	2.22	1.62	1.01	0.63	0.65	0.50
Diarrhea,Gastritis,Enteritis	1.12	1.25	0.56	0.20	0.12	0.14	0.19
Certain Degenerative Diseases	0.83	1.24	1.41	0.67	0.56	0.63	0.66
Complications of Pregnancy	0.62	0.57	0.38	0.16	0.06	0.08	0.09
Certain Diseases of Infancy	2.14	2.34	1.54	1.19	0.93	0.65	0.36
Motor Vehicle Accidents	0.03	0.14	0.17	0.23	0.32	0.49	0.43
Other Accidents and Violence	0.59	0.56	0.61	0.53	0.54	0.80	0.73
All Other and Unknown Causes	5.29	3.44	2.61	1.89	1.51	1.50	1.70

Note: For the corresponding ICD codes refer to the table, found on page 5,
      which describes the 'Cause of Death Categories'

Summary Table: IV (a)

Years of Life Expectancy Gained, at Age 40, Males, if Selected Cause were Deleted

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Expected Years of Life	Increase Years	Increase %	Expected Years of Life	Increase Years	Increase %	Expected Years of Life	Increase Years	Increase %	Expected Years of Life	Increase Years	Increase %	Expected Years of Life	Increase Years	Increase %	Expected Years of Life	Increase Years	Increase %	Expected Years of Life	Increase Years	Increase %
No Cause Deleted	32.33	-	-	32.21	-	-	31.76	-	-	32.48	-	-	32.94	-	-	33.24	-	-	34.69	-	-
Respiratory Tuberculosis	32.82	0.49	1.5	32.70	0.48	1.5	32.17	0.41	1.3	32.75	0.26	0.8	33.05	0.11	0.3	33.27	0.03	0.1	34.70	0.01	0.0
Other Infectious and Parasitic Diseases	32.73	0.40	1.2	32.53	0.32	1.0	32.01	0.26	0.8	32.57	0.09	0.3	33.09	0.15	0.4	33.31	0.07	0.2	34.73	0.04	0.1
Malignant and Benign Neoplasms	33.71	1.39	4.3	33.89	1.67	5.2	33.47	1.71	5.4	34.33	1.84	5.7	35.19	2.25	6.8	35.88	2.64	7.9	37.90	3.21	9.2
Cardiovascular Disease	36.55	4.22	13.1	37.29	5.08	15.8	38.70	6.95	21.9	42.85	10.37	31.9	45.01	12.07	36.6	44.40	11.16	33.6	43.66	8.97	25.8
Influenza, Pneumonia, Bronchitis	33.50	1.17	3.6	33.05	0.84	2.6	32.26	0.50	1.6	32.92	0.44	1.4	33.36	0.42	1.3	33.74	0.50	1.5	35.05	0.35	1.0
Diarrhea, Gastritis, Enteritis	32.38	0.05	0.2	32.26	0.05	0.1	31.81	0.06	0.2	32.51	0.02	0.1	33.00	0.06	0.2	33.27	0.03	0.1	34.75	0.05	0.2
Certain Degenerative Diseases	33.10	0.77	2.4	33.40	1.19	3.7	33.03	1.28	4.0	33.06	0.57	1.8	33.44	0.51	1.5	33.76	0.52	1.6	35.24	0.55	1.6
Complications of Pregnancy	32.33	0.00	0.0	32.21	0.00	0.0	31.76	0.00	0.0	32.48	0.00	0.0	32.94	0.00	0.0	33.24	0.00	0.0	34.69	0.00	0.0
Diseases of Infancy	32.33	0.00	0.0	32.21	0.00	0.0	31.76	0.00	0.0	32.48	0.00	0.0	32.97	0.03	0.1	33.24	0.00	0.0	34.69	0.00	0.0
Motor Vehicle Accidents	32.36	0.03	0.1	32.37	0.16	0.5	31.95	0.19	0.6	32.69	0.20	0.6	33.19	0.25	0.8	33.47	0.23	0.7	34.86	0.17	0.5
Other Accidents and Violence	33.07	0.75	2.3	32.93	0.71	2.2	32.40	0.64	2.0	33.04	0.56	1.7	33.47	0.53	1.6	33.82	0.58	1.7	35.25	0.55	1.6
All Other and Unknown Causes	35.52	3.19	9.9	34.31	2.10	6.5	32.93	1.18	3.7	33.46	0.98	3.0	33.80	0.86	2.6	34.10	0.86	2.6	35.84	1.14	3.3

Notes: 1) The percentage increase is calculated with respect to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5, which describes the 'Cause of Death Categories'

Summary Table: IV (a)

Years of Life Expectancy Gained, at Age 40, Females, if Selected Cause were Deleted

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%
No Cause Deleted	32.85	-	-	33.34	-	-	33.82	-	-	35.58	-	-	37.45	-	-	39.09	-	-	40.88	-	-
Respiratory Tuberculosis	33.29	0.44	1.3	33.70	0.36	1.1	34.09	0.26	0.8	35.74	0.15	0.4	37.49	0.04	0.1	39.11	0.02	0.0	40.88	0.01	0.0
Other Infectious and Parasitic Disease	33.13	0.28	0.9	33.54	0.21	0.6	33.97	0.14	0.4	35.64	0.06	0.2	37.53	0.09	0.2	39.16	0.07	0.2	40.92	0.05	0.1
Malignant and Benign Neoplasms	34.72	1.87	5.7	35.48	2.14	6.4	36.09	2.27	6.7	37.88	2.30	6.5	39.96	2.51	6.7	41.96	2.86	7.3	44.18	3.31	8.1
Cardiovascular Disease	37.23	4.38	13.3	38.74	5.40	16.2	40.79	6.96	20.6	46.30	10.72	30.1	50.82	13.37	35.7	54.21	15.12	38.7	54.09	13.22	32.3
Influenza, Pneumonia, Bronchitis	34.08	1.23	3.7	34.32	0.98	3.0	34.34	0.51	1.5	36.07	0.48	1.4	37.80	0.36	1.0	39.54	0.45	1.1	41.27	0.40	1.0
Diarrhea, Gastritis, Enteritis	32.95	0.10	0.3	33.40	0.06	0.2	33.85	0.02	0.1	35.61	0.03	0.1	37.49	0.04	0.1	39.14	0.05	0.1	40.98	0.10	0.3
Certain Degenerative Diseases	33.62	0.76	2.3	34.61	1.27	3.8	35.28	1.45	4.3	36.20	0.62	1.7	37.96	0.51	1.4	39.63	0.54	1.4	41.44	0.56	1.4
Complications of Pregnancy	32.93	0.08	0.3	33.42	0.08	0.3	33.87	0.04	0.1	35.60	0.02	0.1	37.46	0.01	0.0	39.09	0.00	0.0	40.88	0.00	0.0
Diseases of Infancy	32.85	0.00	0.0	33.34	0.00	0.0	33.82	0.00	0.0	35.58	0.00	0.0	37.45	0.00	0.0	39.09	0.00	0.0	40.88	0.00	0.0
Motor Vehicle Accidents	32.86	0.01	0.0	33.40	0.06	0.2	33.88	0.06	0.2	35.65	0.07	0.2	37.55	0.10	0.3	39.22	0.13	0.3	40.98	0.11	0.3
Other Accidents and Violence	33.11	0.26	0.8	33.62	0.28	0.8	34.14	0.31	0.9	35.84	0.26	0.7	37.71	0.26	0.7	39.47	0.38	1.0	41.25	0.37	0.9
All Other and Unknown Causes	36.27	3.42	10.4	35.32	1.98	5.9	35.00	1.17	3.5	36.52	0.93	2.6	38.26	0.82	2.2	39.93	0.84	2.2	42.00	1.12	2.7

Notes: 1) The percentage increase is calculated with respect
to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5,
which describes the 'Cause of Death Categories'

Summary Table: IV (b)

Years of Life Expectancy Gained, at Age 65, Males, if Selected Cause were Deleted

Cause of Death Categories	1921 Expected Years of Life	1921 Increase Years	1921 %	1931 Expected Years of Life	1931 Increase Years	1931 %	1941 Expected Years of Life	1941 Increase Years	1941 %	1951 Expected Years of Life	1951 Increase Years	1951 %	1961 Expected Years of Life	1961 Increase Years	1961 %	1971 Expected Years of Life	1971 Increase Years	1971 %	1981 Expected Years of Life	1981 Increase Years	1981 %
No Cause Deleted	13.16	–	–	13.29	–	–	12.76	–	–	13.31	–	–	13.53	–	–	13.79	–	–	14.56	–	–
Respiratory Tuberculois	13.27	0.11	0.8	13.39	0.10	0.8	12.85	0.09	0.7	13.39	0.08	0.6	13.61	0.08	0.6	13.81	0.02	0.1	14.57	0.01	0.0
Other Infectious and Parasitic Disease	13.28	0.12	0.9	13.39	0.10	0.8	12.84	0.08	0.6	13.34	0.03	0.2	13.64	0.10	0.8	13.84	0.05	0.3	14.59	0.03	0.2
Malignant and Benign Neoplasms	14.04	0.88	6.7	14.35	1.06	8.0	13.85	1.08	8.5	14.50	1.19	8.9	15.08	1.55	11.4	15.63	1.84	13.3	16.81	2.25	15.4
Cardiovascular Disease	16.81	3.65	27.7	17.85	4.57	34.4	18.75	5.99	46.9	22.22	8.91	66.9	24.19	10.65	78.7	23.79	10.00	72.5	22.61	8.04	55.2
Influenza, Pneumonia, Bronchitis	14.00	0.84	6.4	13.87	0.59	4.4	13.15	0.39	3.1	13.73	0.41	3.1	13.94	0.41	3.0	14.28	0.49	3.5	14.93	0.36	2.5
Diarrhea, Gastritis, Enteritis	13.22	0.06	0.4	13.32	0.04	0.3	12.77	0.01	0.1	13.32	0.01	0.1	13.59	0.06	0.5	13.81	0.02	0.2	14.61	0.04	0.3
Certain Degenerative Diseases	13.64	0.48	3.6	14.07	0.78	5.9	13.71	0.95	7.4	13.67	0.36	2.7	13.87	0.34	2.5	14.09	0.30	2.2	14.89	0.33	2.3
Complications of Pregnancy	13.16	0.00	0.0	13.29	0.00	0.0	12.76	0.00	0.0	13.31	0.00	0.0	13.53	0.00	0.0	13.79	0.00	0.0	14.56	0.00	0.0
Diseases of Infancy	13.16	0.00	0.0	13.29	0.00	0.0	12.76	0.00	0.0	13.31	0.00	0.0	13.58	0.04	0.3	13.79	0.00	0.0	14.56	0.00	0.0
Motor Vehicle Accidents	13.16	0.01	0.0	13.34	0.05	0.4	12.82	0.06	0.4	13.37	0.06	0.5	13.64	0.11	0.8	13.86	0.07	0.5	14.61	0.04	0.3
Other Accidents and Violence	13.41	0.25	1.9	13.51	0.23	1.7	12.97	0.21	1.7	13.50	0.19	1.4	13.74	0.20	1.5	13.95	0.16	1.2	14.75	0.18	1.3
All Other and Unknown Causes	15.92	2.76	21.0	14.93	1.64	12.4	13.62	0.86	6.7	14.06	0.75	5.6	14.20	0.67	4.9	14.45	0.66	4.8	15.52	0.96	6.6

Notes: 1) The percentage increase is calculated with respect
to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5,
which describes the 'Cause of Death Categories'

Summary Table: IV (b)

Years of Life Expectancy Gained, at Age 65, Females, if Selected Cause were Deleted

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%
No Cause Deleted	13.70	-	-	13.98	-	-	13.98	-	-	14.90	-	-	16.10	-	-	17.62	-	-	19.04	-	-
Respiratory Tuberculois	13.81	0.11	0.8	14.07	0.09	0.6	14.03	0.06	0.4	14.94	0.05	0.3	16.12	0.02	0.1	17.62	0.01	0.1	19.04	0.00	0.0
Other Infectious and Parasitic Disease	13.80	0.10	0.7	14.06	0.08	0.6	14.02	0.05	0.3	14.92	0.02	0.1	16.15	0.05	0.3	17.66	0.04	0.2	19.07	0.03	0.2
Malignant and Benign Neoplasms	14.57	0.87	6.4	15.01	1.03	7.4	15.07	1.10	7.9	16.05	1.15	7.7	17.43	1.33	8.3	19.24	1.62	9.2	21.06	2.02	10.6
Cardiovascular Disease	17.52	3.82	27.9	18.87	4.89	35.0	20.32	6.35	45.4	25.02	10.13	68.0	29.34	13.24	82.3	33.08	15.47	87.8	32.53	13.49	70.9
Influenza, Pneumonia, Bronchitis	14.73	1.03	7.5	14.83	0.85	6.1	14.43	0.46	3.3	15.35	0.45	3.0	16.44	0.34	2.1	18.03	0.42	2.4	19.43	0.40	2.1
Diarrhea, Gastritis, Enteritis	13.78	0.08	0.6	14.03	0.05	0.3	14.00	0.02	0.1	14.92	0.02	0.1	16.13	0.04	0.2	17.66	0.04	0.3	19.13	0.09	0.5
Certain Degenerative Diseases	14.13	0.43	3.1	14.84	0.86	6.1	15.04	1.07	7.6	15.34	0.44	3.0	16.46	0.36	2.2	18.00	0.38	2.2	19.47	0.43	2.3
Complications of Pregnancy	13.70	0.00	0.0	13.98	0.00	0.0	13.98	0.00	0.0	14.90	0.00	0.0	16.10	0.00	0.0	17.62	0.00	0.0	19.04	0.00	0.0
Diseases of Infancy	13.70	0.00	0.0	13.98	0.00	0.0	13.98	0.00	0.0	14.90	0.00	0.0	16.10	0.00	0.0	17.62	0.00	0.0	19.04	0.00	0.0
Motor Vehicle Accidents	13.71	0.01	0.0	14.00	0.02	0.2	14.00	0.02	0.2	14.92	0.02	0.1	16.13	0.04	0.2	17.66	0.05	0.3	19.07	0.04	0.2
Other Accidents and Violence	13.87	0.17	1.3	14.19	0.21	1.5	14.22	0.24	1.7	15.08	0.19	1.3	16.28	0.18	1.1	17.81	0.19	1.1	19.24	0.20	1.1
All Other and Unknown Causes	16.52	2.82	20.6	15.45	1.47	10.5	14.75	0.77	5.5	15.57	0.67	4.5	16.68	0.58	3.6	18.23	0.61	3.5	19.96	0.93	4.9

Notes: 1) The percentage increase is calculated with respect to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5, which describes the 'Cause of Death Categories'

Summary Table: IV (c)

Years of Life Expectancy Gained, at Age 75, Males, if Selected Cause were Deleted

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%
No Cause Deleted	7.68	-	-	7.91	-	-	7.46	-	-	7.87	-	-	8.25	-	-	8.62	-	-	9.04	-	-
Respiratory Tuberculosis	7.70	0.03	0.4	7.94	0.03	0.4	7.48	0.03	0.3	7.91	0.03	0.4	8.34	0.09	1.1	8.62	0.01	0.1	9.04	0.01	0.1
Other Infectious and Parasitic Disease	7.75	0.07	0.9	7.97	0.05	0.7	7.48	0.02	0.3	7.88	0.01	0.1	8.34	0.10	1.2	8.65	0.03	0.4	9.06	0.02	0.2
Malignant and Benign Neoplasms	8.12	0.44	5.8	8.49	0.58	7.4	8.05	0.59	8.0	8.57	0.70	8.9	9.25	1.00	12.1	9.78	1.17	13.6	10.49	1.45	16.1
Cardiovascular Disease	10.47	2.79	36.4	11.78	3.87	48.9	12.55	5.09	68.3	15.72	7.85	99.7	17.94	9.69	117.5	17.89	9.28	107.7	16.39	7.36	81.4
Influenza, Pneumonia, Bronchitis	8.36	0.68	8.9	8.37	0.45	5.7	7.82	0.36	4.8	8.29	0.41	5.3	8.67	0.42	5.1	9.08	0.47	5.4	9.43	0.39	4.3
Diarrhea, Gastritis, Enteritis	7.73	0.05	0.7	7.95	0.04	0.5	7.47	0.01	0.1	7.88	0.01	0.1	8.33	0.08	1.0	8.64	0.02	0.2	9.08	0.04	0.4
Certain Degenerative Diseases	7.94	0.26	3.4	8.46	0.55	6.9	8.19	0.73	9.8	8.12	0.24	3.1	8.52	0.28	3.3	8.82	0.20	2.4	9.28	0.24	2.7
Complications of Pregnancy	7.68	0.00	0.0	7.91	0.00	0.0	7.46	0.00	0.0	7.87	0.00	0.0	8.25	0.00	0.0	8.62	0.00	0.0	9.04	0.00	0.0
Diseases of Infancy	7.68	0.00	0.0	7.91	0.00	0.0	7.46	0.00	0.0	7.87	0.00	0.0	8.32	0.07	0.8	8.62	0.00	0.0	9.04	0.00	0.0
Motor Vehicle Accidents	7.68	0.00	0.0	7.94	0.03	0.3	7.48	0.03	0.4	7.90	0.03	0.4	8.35	0.10	1.2	8.65	0.03	0.4	9.06	0.02	0.3
Other Accidents and Violence	7.85	0.18	2.3	8.05	0.14	1.7	7.61	0.15	2.1	8.00	0.13	1.7	8.44	0.19	2.3	8.73	0.12	1.3	9.17	0.13	1.5
All Other and Unknown Causes	10.61	2.93	38.2	9.44	1.53	19.3	8.21	0.75	10.1	8.52	0.65	8.3	8.83	0.59	7.1	9.14	0.53	6.1	9.85	0.81	9.0

Notes: 1) The percentage increase is calculated with respect to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5, which describes the 'Cause of Death Categories'

Summary Table: IV (c)

Years of Life Expectancy Gained, at Age 75, Females, if Selected Cause were Deleted

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%	Expected Years of Life	Increase Years	%
No Cause Deleted	8.07	-	-	8.23	-	-	8.14	-	-	8.64	-	-	9.56	-	-	10.84	-	-	12.03	-	-
Respiratory Tuberculois	8.11	0.03	0.4	8.26	0.03	0.4	8.16	0.02	0.3	8.66	0.02	0.2	9.58	0.02	0.2	10.85	0.01	0.1	12.04	0.00	0.0
Other Infectious and Parasitic Disease	8.13	0.06	0.7	8.28	0.05	0.6	8.16	0.02	0.3	8.66	0.01	0.1	9.59	0.03	0.4	10.87	0.03	0.3	12.06	0.03	0.2
Malignant and Benign Neoplasms	8.48	0.40	5.0	8.79	0.55	6.7	8.71	0.57	7.0	9.30	0.66	7.6	10.34	0.78	8.2	11.85	1.01	9.3	13.33	1.29	10.7
Cardiovascular Disease	11.05	2.98	36.9	12.52	4.29	52.1	13.70	5.56	68.3	17.94	9.30	107.6	22.24	12.68	132.7	26.21	15.37	141.7	25.52	13.48	112.0
Influenza, Pneumonia, Bronchitis	8.86	0.79	9.8	8.96	0.73	8.8	8.59	0.45	5.5	9.09	0.45	5.2	9.90	0.35	3.6	11.26	0.42	3.9	12.45	0.41	3.4
Diarrhea, Gastritis, Enteritis	8.15	0.08	1.0	8.28	0.05	0.6	8.16	0.02	0.2	8.66	0.02	0.2	9.59	0.03	0.3	10.88	0.04	0.4	12.12	0.08	0.7
Certain Degenerative Diseases	8.31	0.24	3.0	8.76	0.53	6.4	8.86	0.72	8.9	8.94	0.30	3.4	9.80	0.24	2.5	11.10	0.26	2.4	12.37	0.34	2.8
Complications of Pregnancy	8.07	0.00	0.0	8.23	0.00	0.0	8.14	0.00	0.0	8.64	0.00	0.0	9.56	0.00	0.1	10.84	0.00	0.0	12.03	0.00	0.0
Diseases of Infancy	8.07	0.00	0.0	8.23	0.00	0.0	8.14	0.00	0.0	8.64	0.00	0.0	9.56	0.00	0.1	10.84	0.00	0.0	12.03	0.00	0.0
Motor Vehicle Accidents	8.07	0.00	0.0	8.25	0.01	0.2	8.15	0.01	0.1	8.65	0.01	0.1	9.58	0.02	0.2	10.87	0.02	0.2	12.05	0.02	0.1
Other Accidents and Violence	8.25	0.18	2.2	8.45	0.22	2.6	8.38	0.24	2.9	8.84	0.19	2.2	9.74	0.18	1.9	11.02	0.17	1.6	12.22	0.18	1.5
All Other and Unknown Causes	11.06	2.99	37.1	9.60	1.37	16.6	8.83	0.69	8.4	9.20	0.56	6.5	10.03	0.47	4.9	11.34	0.49	4.6	12.84	0.81	6.7

Notes: 1) The percentage increase is calculated with respect to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5, which describes the 'Cause of Death Categories'

Summary Table: V (a)

Survivors of the Birth Cohort of 100,000 for Cause Deleted Life Tables,
to Age 65, Canada, Males, 1921 to 1981

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained
No Cause Deleted	57197	-	-	57777	-	-	60716	-	-	66061	-	-	68830	-	-	70078	-	-	74731	-	-
Respiratory Tuberculosis	59725	2528	4.4	60116	2339	4.0	62654	1938	3.2	67158	1097	1.7	69048	218	0.3	70148	70	0.1	74752	21	0.0
Other Infectious and Parasitic Diseases	60075	2878	5.0	59815	2038	3.5	62319	1603	2.6	66652	591	0.9	69263	433	0.6	70331	253	0.4	74826	95	0.1
Malignant and Benign Neoplasms	59816	2619	4.6	61065	3288	5.7	64480	3764	6.2	70193	4132	6.3	73564	4734	6.9	75340	5262	7.5	80543	5812	7.8
Cardiovascular Disease	62545	5348	9.3	63530	5753	10.0	69277	8561	14.1	77759	11698	17.7	80953	12123	17.6	80971	10893	15.5	83173	8442	11.3
Influenza, Pneumonia, Bronchitis	60784	3587	6.3	60827	3050	5.3	62954	2238	3.7	67232	1171	1.8	69667	837	1.2	70839	761	1.1	75051	320	0.4
Diarrhea, Gastritis, Enteritis	58557	1360	2.4	59400	1623	2.8	61598	882	1.5	66318	257	0.4	68980	150	0.2	70166	88	0.1	74816	85	0.1
Certain Degenerative Diseases	58971	1774	3.1	60136	2359	4.1	63115	2399	4.0	67440	1379	2.1	69973	1143	1.7	71319	1241	1.8	75903	1172	1.6
Complications of Pregnancy	57197	0	0.0	57777	0	0.0	60716	0	0.0	66061	0	0.0	68830	0	0.0	70078	0	0.0	74731	0	0.0
Diseases of Infancy	59888	2691	4.7	60692	2915	5.0	62788	2072	3.4	67606	1545	2.3	70026	1196	1.7	70831	753	1.1	75087	356	0.5
Motor Vehicle Accidents	57375	178	0.3	58490	713	1.2	61679	963	1.6	67289	1228	1.9	70361	1531	2.2	71850	1772	2.5	76120	1389	1.9
Other Accidents and Violence	60616	3419	6.0	61051	3274	5.7	63857	3141	5.2	68805	2744	4.2	71400	2570	3.7	73054	2976	4.2	77427	2696	3.6
All Other and Unknown Causes	63855	6658	11.6	63078	5301	9.2	64623	3907	6.4	68850	2789	4.2	71133	2303	3.3	72274	2196	3.1	76982	2251	3.0

Notes: 1) The percentage increase is calculated with respect
to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5,
which describes the 'Cause of Death Categories'

Summary Table: V (a)

Survivors of the Birth Cohort of 100,000, for Cause Deleted Life Tables, to Age 65, Canada, Females, 1921 to 1981

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained
No Cause Deleted	59262	-	-	61217	-	-	67313	-	-	75548	-	-	80961	-	-	83118	-	-	86122	-	-
Respiratory Tuberculosis	61922	2660	4.5	63899	2682	4.4	69181	1868	2.8	76366	818	1.1	81074	113	0.1	83155	37	0.0	86129	7	0.0
Other Infectious and Parasitic Diseases	61938	2676	4.5	63075	1858	3.0	68562	1249	1.9	76028	480	0.6	81247	286	0.4	83322	204	0.2	86216	94	0.1
Malignant and Benign Neoplasms	63467	4205	7.1	66088	4871	8.0	72656	5343	7.9	80939	5391	7.1	86319	5358	6.6	88486	5368	6.5	91427	5305	6.2
Cardiovascular Disease	64569	5307	9.0	66926	5709	9.3	73984	6671	9.9	82810	7262	9.6	86653	5692	7.0	87404	4286	5.2	89370	3248	3.8
Influenza, Pneumonia, Bronchitis	62425	3163	5.3	63880	2663	4.4	69172	1859	2.8	76623	1075	1.4	81557	596	0.7	83610	492	0.6	86327	205	0.2
Diarrhea, Gastritis, Enteritis	60421	1159	2.0	62524	1307	2.1	67903	590	0.9	75788	240	0.3	81092	131	0.2	83203	85	0.1	86205	83	0.1
Certain Degenerative Diseases	61043	1781	3.0	63674	2457	4.0	69798	2485	3.7	76686	1138	1.5	81844	883	1.1	83958	840	1.0	86788	666	0.8
Complications of Pregnancy	60400	1138	1.9	62262	1045	1.7	68028	715	1.1	75848	300	0.4	81100	139	0.2	83154	36	0.0	86130	8	0.0
Diseases of Infancy	61385	2123	3.6	63554	2337	3.8	68905	1592	2.4	76824	1276	1.7	81986	1025	1.3	83768	650	0.8	86427	305	0.4
Motor Vehicle Accidents	59320	58	0.1	61487	270	0.4	67608	295	0.4	75942	394	0.5	81532	571	0.7	83872	754	0.9	86707	585	0.7
Other Accidents and Violence	60141	879	1.5	62008	791	1.3	68173	860	1.3	76301	753	1.0	81729	768	0.9	84351	1233	1.5	87147	1025	1.2
All Other and Unknown Causes	66141	6879	11.6	66155	4938	8.1	71174	3861	5.7	78179	2631	3.5	83044	2083	2.6	84978	1860	2.2	87791	1669	1.9

Notes: 1) The percentage increase is calculated with respect to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5, which describes the 'Cause of Death Categories'

Summary Table: V (b)

Survivors of the Birth Cohort of 100,000, for Cause Deleted Life Tables, to Age 75, Canada, Males, 1921 to 1981

Cause of Death Categories	1921 Number of Survivors	1921 Number Gained	1921 Pct. Gained	1931 Number of Survivors	1931 Number Gained	1931 Pct. Gained	1941 Number of Survivors	1941 Number Gained	1941 Pct. Gained	1951 Number of Survivors	1951 Number Gained	1951 Pct. Gained	1961 Number of Survivors	1961 Number Gained	1961 Pct. Gained	1971 Number of Survivors	1971 Number Gained	1971 Pct. Gained	1981 Number of Survivors	1981 Number Gained	1981 Pct. Gained
No Cause Deleted	36447	-	-	36620	-	-	37336	-	-	42137	-	-	43855	-	-	44814	-	-	50420	-	-
Respiratory Tuberculosis	38449	2002	5.5	38463	1843	5.0	38849	1513	4.1	43128	991	2.4	44108	253	0.6	44908	94	0.2	50451	31	0.1
Other Infectious and Parasitic Diseases	38621	2174	6.0	38222	1602	4.4	38616	1280	3.4	42626	489	1.2	44332	477	1.1	45104	290	0.6	50548	128	0.3
Malignant and Benign Neoplasms	40814	4367	12.0	41811	5191	14.2	43166	5830	15.6	48572	6435	15.3	51514	7659	17.5	53680	8866	19.8	60929	10509	20.8
Cardiovascular Disease	47507	11060	30.3	48367	11747	32.1	53964	16628	44.5	64383	22246	52.8	67498	23643	53.9	66236	21422	47.8	68197	17777	35.3
Influenza, Pneumonia, Bronchitis	40592	4145	11.4	39935	3315	9.1	39540	2204	5.9	43666	1529	3.6	45116	1261	2.9	46272	1458	3.3	51172	752	1.5
Diarrhea, Gastritis, Enteritis	37426	979	2.7	37714	1094	3.0	37897	561	1.5	42327	190	0.5	43995	140	0.3	44919	105	0.2	50580	160	0.3
Certain Degenerative Diseases	38974	2527	6.9	40060	3440	9.4	41213	3877	10.4	44041	1904	4.5	45404	1549	3.5	46469	1655	3.7	52090	1670	3.3
Complications of Pregnancy	36447	0	0.0	36620	0	0.0	37336	0	0.0	42137	0	0.0	43855	0	0.0	44814	0	0.0	50420	0	0.0
Diseases of Infancy	38162	1715	4.7	38467	1847	5.0	38610	1274	3.4	43122	985	2.3	44617	762	1.7	45295	481	1.1	50660	240	0.5
Motor Vehicle Accidents	36581	134	0.4	37209	589	1.6	38111	775	2.1	43133	996	2.4	45049	1194	2.7	46176	1362	3.0	51504	1084	2.1
Other Accidents and Violence	39235	2788	7.6	39316	2696	7.4	39841	2505	6.7	44426	2289	5.4	45921	2066	4.7	47152	2338	5.2	52736	2316	4.6
All Other and Unknown Causes	44297	7850	21.5	42941	6321	17.3	41685	4349	11.6	45641	3504	8.3	46835	2980	6.8	47865	3051	6.8	54073	3653	7.2

Notes: 1) The percentage increase is calculated with respect
to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5,
which describes the 'Cause of Death Categories'

Summary Table: V (b)

Survivors of the Birth Cohort of 100,000, for Cause Deleted Life Tables, to Age 75, Canada, Females, 1921 to 1981

Cause of Death Categories	1921			1931			1941			1951			1961			1971			1981		
	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained	Number of Survivors	Number Gained	Pct. Gained
No Cause Deleted	39119	-	-	40997	-	-	45471	-	-	54110	-	-	61126	-	-	65662	-	-	70543	-	-
Respiratory Tuberculosis	41270	2151	5.5	43104	2107	5.1	46951	1480	3.3	54868	758	1.4	61268	142	0.2	65716	54	0.1	70555	12	0.0
Other Infectious and Parasitic Diseases	41181	2062	5.3	42464	1467	3.6	46484	1013	2.2	54515	405	0.7	61484	358	0.6	65914	252	0.4	70679	136	0.2
Malignant and Benign Neoplasms	44675	5556	14.2	47400	6403	15.6	52756	7285	16.0	61792	7682	14.2	69336	8210	13.4	74258	8596	13.1	79734	9191	13.0
Cardiovascular Disease	50178	11059	28.3	52679	11682	28.5	60406	14935	32.8	72070	17960	33.2	77299	16173	26.5	78527	12865	19.6	80528	9985	14.2
Influenza, Pneumonia, Bronchitis	43534	4415	11.3	44474	3477	8.5	47556	2085	4.6	55628	1518	2.8	62031	905	1.5	66513	851	1.3	71031	488	0.7
Diarrhea, Gastritis, Enteritis	40040	921	2.4	41947	950	2.3	45909	438	1.0	54337	227	0.4	61287	161	0.3	65802	140	0.2	70739	196	0.3
Certain Degenerative Diseases	41515	2396	6.1	44969	3972	9.7	50077	4606	10.1	56211	2101	3.9	62793	1667	2.7	67267	1605	2.4	71884	1341	1.9
Complications of Pregnancy	39870	751	1.9	41697	700	1.7	45954	483	1.1	54325	215	0.4	61231	105	0.2	65691	29	0.0	70550	7	0.0
Diseases of Infancy	40521	1402	3.6	42562	1565	3.8	46546	1075	2.4	55024	914	1.7	61900	774	1.3	66176	514	0.8	70793	250	0.4
Motor Vehicle Accidents	39181	62	0.2	41234	237	0.6	45761	290	0.6	54480	370	0.7	61676	550	0.9	66407	745	1.1	71140	597	0.8
Other Accidents and Violence	39944	825	2.1	41846	849	2.1	46467	996	2.2	54933	823	1.5	61949	823	1.3	66930	1268	1.9	71661	1118	1.6
All Other and Unknown Causes	47097	7978	20.4	46837	5840	14.2	49673	4202	9.2	57488	3378	6.2	63937	2811	4.6	68306	2644	4.0	73249	2706	3.8

Notes: 1) The percentage increase is calculated with respect to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5, which describes the "Cause of Death Categories".

Summary Table: V (c)

Survivors of the Birth Cohort of 100,000, for Cause Deleted Life Tables, to Age 85, Canada, Males, 1921 to 1981

Cause of Death Categories	1921 Number of Survivors	1921 Number Gained	1921 Pct. Gained	1931 Number of Survivors	1931 Number Gained	1931 Pct. Gained	1941 Number of Survivors	1941 Number Gained	1941 Pct. Gained	1951 Number of Survivors	1951 Number Gained	1951 Pct. Gained	1961 Number of Survivors	1961 Number Gained	1961 Pct. Gained	1971 Number of Survivors	1971 Number Gained	1971 Pct. Gained	1981 Number of Survivors	1981 Number Gained	1981 Pct. Gained
No Cause Deleted	11177	-	-	11723	-	-	10652	-	-	13449	-	-	15220	-	-	16312	-	-	20003	-	-
Respiratory Tuberculosis	11867	690	6.2	12394	671	5.7	11158	506	4.7	13868	419	3.1	15375	155	1.0	16371	59	0.4	20034	31	0.2
Other Infectious and Parasitic Diseases	12041	864	7.7	12390	667	5.7	11078	426	4.0	13634	185	1.4	15469	249	1.6	16505	193	1.2	20121	118	0.6
Malignant and Benign Neoplasms	13817	2640	23.6	15185	3462	29.5	14251	3599	33.8	17979	4530	33.7	21106	5886	38.7	23545	7233	44.3	29725	9722	48.6
Cardiovascular Disease	22641	11464	102.6	25750	14027	119.7	29660	19008	178.4	41127	27678	205.8	45945	30725	201.9	44306	27994	171.6	44459	24456	122.3
Influenza, Pneumonia, Bronchitis	14216	3039	27.2	14288	2565	21.9	12207	1555	14.6	15106	1657	12.3	16574	1354	8.9	18002	1690	10.4	21235	1232	6.2
Diarrhea, Gastritis, Enteritis	11607	430	3.8	12151	428	3.7	10843	191	1.8	13535	86	0.6	15311	91	0.6	16401	89	0.5	20177	174	0.9
Certain Degenerative Diseases	12652	1475	13.2	14356	2633	22.5	13835	3183	29.9	14798	1349	10.0	16403	1183	7.8	17529	1217	7.5	21397	1394	7.0
Complications of Pregnancy	11177	0	0.0	11723	0	0.0	10652	0	0.0	13449	0	0.0	15220	0	0.0	16312	0	0.0	20003	0	0.0
Diseases of Infancy	11703	526	4.7	12314	591	5.0	11015	363	3.4	13763	314	2.3	15485	265	1.7	16487	175	1.1	20098	95	0.5
Motor Vehicle Accidents	11220	43	0.4	11977	254	2.2	10959	307	2.9	13868	419	3.1	15729	509	3.3	16909	597	3.7	20517	514	2.6
Other Accidents and Violence	12489	1312	11.7	12934	1211	10.3	11781	1129	10.6	14556	1107	8.2	16256	1036	6.8	17456	1144	7.0	21295	1292	6.5
All Other and Unknown Causes	19878	8701	77.8	17161	5438	46.4	13850	3198	30.0	16475	3026	22.5	17703	2483	16.3	18879	2567	15.7	23896	3893	19.5

Notes: 1) The percentage increase is calculated with respect to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5, which describes the 'Cause of Death Categories'

Summary Table: V (c)

Survivors of the Birth Cohort of 100,000, for Cause Deleted Life Tables,
to Age 85, Canada, Females, 1921 to 1981

Cause of Death Categories	1921 Number of Survivors	1921 Number Gained	1921 Pct. Gained	1931 Number of Survivors	1931 Number Gained	1931 Pct. Gained	1941 Number of Survivors	1941 Number Gained	1941 Pct. Gained	1951 Number of Survivors	1951 Number Gained	1951 Pct. Gained	1961 Number of Survivors	1961 Number Gained	1961 Pct. Gained	1971 Number of Survivors	1971 Number Gained	1971 Pct. Gained	1981 Number of Survivors	1981 Number Gained	1981 Pct. Gained
No Cause Deleted	13059	-	-	13958	-	-	15330	-	-	20091	-	-	26875	-	-	33654	-	-	40690	-	-
Respiratory Tuberculosis	13874	815	6.2	14773	815	5.8	15913	583	3.8	20450	359	1.8	26996	121	0.4	33709	55	0.2	40710	20	0.0
Other Infectious and Parasitic Diseases	13904	845	6.5	14603	645	4.6	15735	405	2.6	20286	195	1.0	27138	263	1.0	33880	226	0.7	40852	162	0.4
Malignant and Benign Neoplasms	16191	3132	24.0	17954	3996	28.6	20015	4685	30.6	25713	5622	28.0	33985	7110	26.5	42268	8614	25.6	50973	10283	25.3
Cardiovascular Disease	25440	12381	94.8	29718	15760	112.9	36638	21308	139.0	50622	30531	152.0	59445	32570	121.2	62553	28899	85.9	64631	23941	58.8
Influenza, Pneumonia, Bronchitis	16642	3583	27.4	17047	3089	22.1	17295	1965	12.8	22046	1955	9.7	28270	1395	5.2	35158	1504	4.5	41803	1113	2.7
Diarrhea, Gastritis, Enteritis	13570	511	3.9	14393	435	3.1	15536	206	1.3	20227	136	0.7	27035	160	0.6	33862	208	0.6	41040	350	0.9
Certain Degenerative Diseases	14536	1477	11.3	16931	2973	21.3	19441	4111	26.8	22066	1975	9.8	28554	1679	6.2	35465	1811	5.4	42606	1916	4.7
Complications of Pregnancy	13310	251	1.9	14196	238	1.7	15493	163	1.1	20171	80	0.4	26921	46	0.2	33669	15	0.0	40694	4	0.0
Diseases of Infancy	13527	468	3.6	14491	533	3.8	15692	362	2.4	20430	339	1.7	27215	340	1.3	33917	263	0.8	40834	144	0.4
Motor Vehicle Accidents	13082	23	0.2	14080	122	0.9	15463	133	0.9	20267	176	0.9	27186	311	1.2	34123	469	1.4	41110	420	1.0
Other Accidents and Violence	13795	736	5.6	14782	824	5.9	16370	1040	6.8	20987	896	4.5	27760	885	3.3	34738	1084	3.2	41774	1084	2.7
All Other and Unknown Causes	22229	9170	70.2	19138	5180	37.1	18615	3285	21.4	23103	3012	15.0	29710	2835	10.5	36529	2875	8.5	44391	3701	9.1

Notes: 1) The percentage increase is calculated with respect
to the No Cause Deleted value.
2) For the corresponding ICD codes refer to the table, found on page 5,
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